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# NetworkWorld

June 26, 2000

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## The Omega Files

How a Secret Service agent, a data recovery specialist and a federal prosecutor tracked down and convicted former network administrator Tim Lloyd, who faces sentencing next month on computer sabotage charges. Page 62.

After a software time bomb destroyed Omega Engineering's key manufacturing programs, data recovery expert Greg Olson (pictured here) sifted through the wreckage of the company's hard drive until he pieced together the code that caused the damage.

## 'HTTP on steroids' to ease protocol work

BY CAROLYN DUFFY MARSAN

A new communications technology created by one of the Internet's most prolific authors and developers is generating buzz within the Internet engineering community, prompting an effort to standardize the technology before its anticipated launch next year.

The Blocks Extensible Exchange Protocol (BXXP) is the brainchild of Marshall Rose, an expert on network management, messaging and

See **BXXP**, page 102

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## AT&T ratchets up IP

Carrier to boost 'Net backbone to OC-192; add PKI for managed VPN service.

BY DENISE PAPPALARDO

BEDMINSTER, N.J. — AT&T is kicking its IP efforts up a notch with Internet backbone and service upgrades that offer users more speed, security and flexibility.

The company is upgrading its Internet backbone to support OC-192 — 10G bit/sec — from coast to coast (see graphic, page 104). In addition, AT&T next month will announce public-key infrastructure (PKI) support for managed VPN service customers looking for enhanced security. AT&T is also testing new access services for its Integrated Network Connect (INC) offering.

Most of AT&T's Internet backbone runs at OC-48 speeds today, with only one OC-192 connection from Cambridge, Mass., to New

York. AT&T was one of the first ISPs to roll out OC-192 support, but the company lost its edge by not moving as quickly as competitors Cable & Wireless and UUNET, which have multiple OC-192 links up and running.

While AT&T lost its lead in the OC-192 race, it shouldn't affect the service provider's ability to keep up with bandwidth demands in the long run, says Lisa Pierce, director of telecommunications services at Giga Information Group, a Cambridge, Mass., consulting firm. "As long as AT&T doesn't get a company like AOL dumping all of their traffic onto their network,

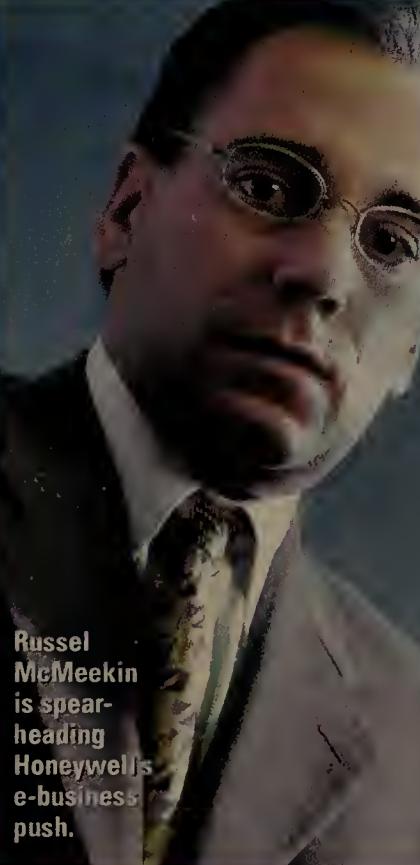
See **AT&T**, page 104

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### GOING TO THE EDGE

For more on carriers and the latest edge-of-the-net technologies, head to our new site, The Edge. You'll find breaking news, opinions and all the research materials you need.

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## Remaking Honeywell

BY CAROLYN DUFFY MARSAN

Legacy firm morphing into e-biz wiz.

MORRISTOWN, N.J. — Tucked in a corner of Honeywell's corporate campus is a building renovation project that symbolizes how this Old Economy aircraft and automotive parts manufacturer is transforming itself into an Internet venture.

Forget cubicles and corner offices. Honeywell's e-Business Café will feature Starbucks coffee, Ping-Pong

Russel McMeekin is spearheading Honeywell's e-business push.

See Honeywell, page 18.

KEN GABRIEL/STYLING: KAREN

# You think your company's online.

It takes a ton of IT dollars to get your company online. But everything your company needs to keep competitive isn't online. In fact, 26% of the key knowledge in most organizations is still stored on paper. And getting the knowledge in those documents online is going to help determine who thrives in the Internet world. The Xerox Document Centre system can help you scan all your reports, invoices, contracts, presentations, you name it, into work collaboration software systems like Lotus Notes and Microsoft Exchange. You access what you need, where you need it, and share what you need with colleagues and customers alike. The details, of course, are online at [www.xerox.com/online](http://www.xerox.com/online). Or just call us at 1-800-ASK-XEROX, ext. online. Keep the Conversation Going. Share the Knowledge. Look for our booth #4322 at PC Expo.



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A dark, atmospheric scene featuring a stack of grey, rectangular blocks with a rough, textured surface. The blocks are arranged in a loose pile, with some stacked on top of others. A single, glowing yellow lightbulb hangs from the top center, casting a soft glow on the blocks. The background is dark and indistinct.

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# THE OMEGA FILES

How a Secret Service agent, a data-recovery specialist and a federal prosecutor tracked down and convicted former network administrator Tim Lloyd, left, who faces sentencing next month on computer sabotage charges. **Page 62**

**Feature:** Programmable network chips are slated to begin appearing in products this year. **Page 77.**

**Face-off:** Is Internet voting a great way to increase participation, or does it simply deepen the digital divide between the haves and have-nots? **Page 61.**

## Review

• **Appliance PCs:** We look at two appliance PCs targeted at the corporate market, the iPAQ from Compaq and the e-Vectra from HP. **Page 73.**



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## Management

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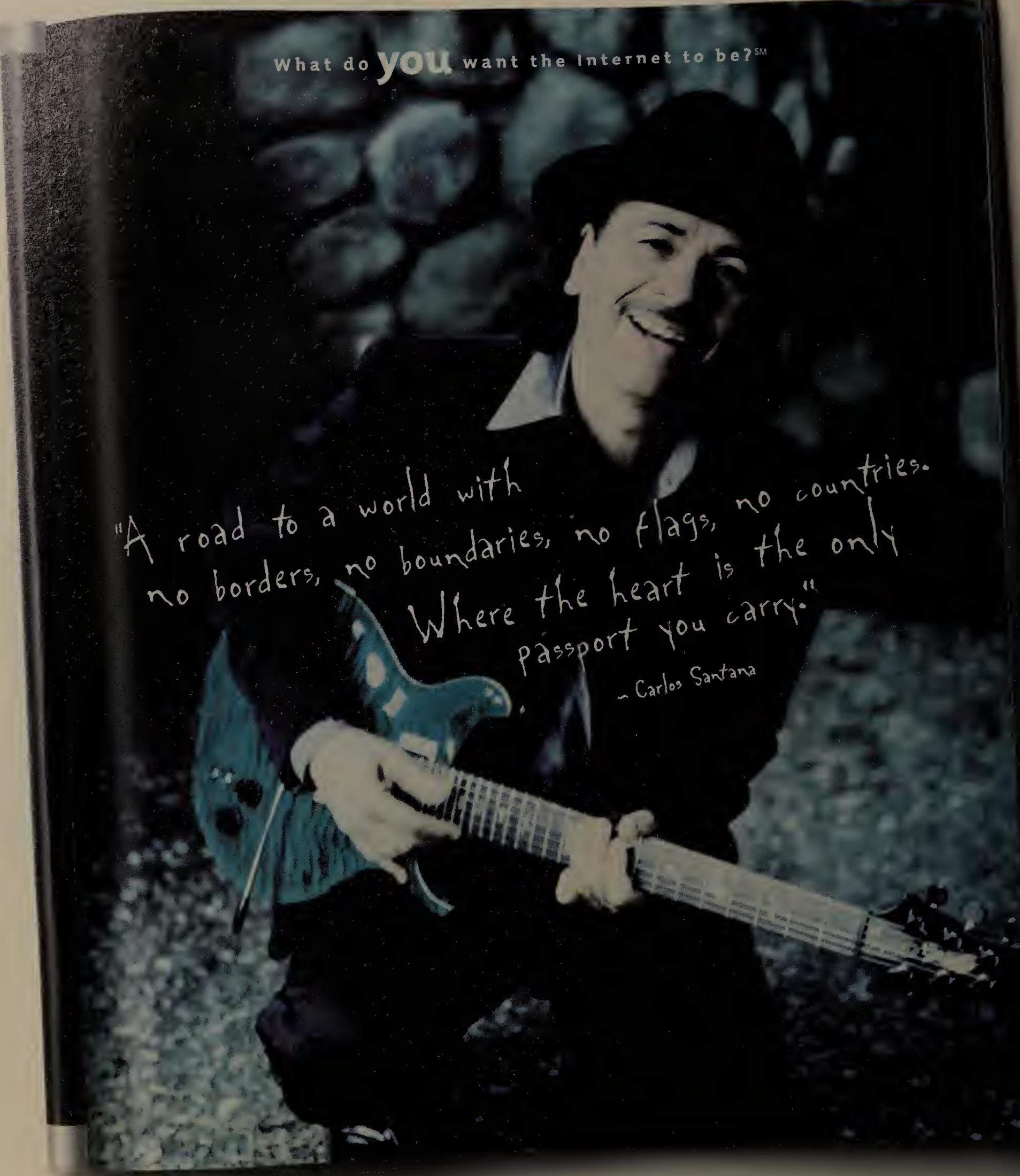
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CONTACT US Network World, 118 Turnpike Road, Southborough, MA 01772; Phone: (508) 460-3333; Fax: (508) 490-6438; E-mail: nwnews@nww.com;

CIRCULATION: Phone: (508) 490-6444; Fax: (508) 490-6400; E-mail: nwcirc@nww.com; STAFF: See the masthead on page 20 for more contact information. REPRINTS: (717) 399-1900



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### Help Desk

- A reader is in a jam over his NetWare servers: "The server is up and running, but nobody knows the administrative password or any other accounts to access crucial data sitting on the server," he says. Find out what Help Desk Editor Ron Nutter recommends. **DocFinder: 8731**

### Test Pilots

- Earn your wings with our new interactive reviews project. Simply write up a review of the products you have in your network, using our online form. The more reviews you submit, the closer you are to winning our top prize, a bomber jacket. **DocFinder: 8635**



### Webcast

- Hacking back. When is it right for you to take matters into your own hands and strike back at hackers? Our panel of security experts will help you decide what methods are available and when they should be used. Also, join Executive News Editor Doug Barney, NetBuzz's Paul McNamara and Gearhead/Backspin author Mark Gibbs on "The Networked World." Register now for this live Webcast, which will be aired at 1 p.m., Friday, July 14. **DocFinder: 8347**

## FORUMS

- Calling all volunteers. Are you looking to offer some of your time to a nonprofit in your area? Do you know of a nonprofit that needs some technical expertise? Log on and share your time and skills. **DocFinder: 8732**
- Outrageous perks. Ever gotten a BMW from a prospective employer? What are some of the wild carrots employers entice you with these days? **DocFinder: 8637**

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## COONEY'S CORNER

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### Dell rolls out Linux servers

Linux, Linux everywhere. Dell last week joined the swelling ranks of Linux server providers when the firm announced it would ship Linux preinstalled with Windows and NetWare on its PowerEdge servers. The company entered an agreement with Red Hat Software for its Red Hat Linux 6.2. Internally, Dell will run Red Hat Linux on its PowerEdge servers and Precision workstations. **DocFinder: 8741**

### \$11 billion needed for rural broadband upgrade

The National Exchange Carrier Association (NECA) has released a survey showing it would cost nearly \$11 billion to upgrade rural telephone lines to broadband DSL capability. The results of the survey of NECA member companies were released at a news conference at which officials also said a search had begun for funding to help companies serving rural areas pay for the upgrade. The Federal Communications Commission defines broadband as the ability to support a data rate of at least 200K bit/sec upstream and downstream. NECA officials say alternative technologies exist for delivering broadband to remote areas; however, the study only produced estimates related to DSL. **DocFinder: 8742**

### Hackers just do it to Nike.com again

Just when Nike.com thought it had nipped Wednesday's hack attack in the bud, a second, unrelated hack job on Thursday once again knocked out the popular site. An official at the sportswear maker's corporate office in Beaverton, Ore., said with the help of the FBI, the company may have identified the group that sabotaged Nike.com for a total of six hours Wednesday morning. **DocFinder: 8743**

— Michael Cooney, associate news editor

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## COLUMNISTS

### View from The Edge

*A guaranteed pass for edge equipment*

The Edge's Managing Editor David Rohde asks: Do we need to regulate which carriers get to put edge equipment in commercial buildings? **DocFinder: 8733**



### Compendium

*Living la vida Lycos*

Fusion Executive Editor Adam Gaffin tells us where the name "Lycos" comes from, why he's cranky about the company's relationship with AT&T, and why British Telecom thinks it owns the Web. **DocFinder: 8734**



### Water Cooler

*When good programs go bad*

What happens when your favorite program gets a little too plump in its newest version? All hell breaks loose, according to Fusion Managing Editor Sandra Gittlen. **DocFinder: 8735**

## NEWS BRIEFS, JUNE 26, 2000

**UUNET gets new leader**

UUNET last week replaced President and CEO Mark Spagnolo with Bob Hartnett, president of global accounts at UUNET parent company MCI WorldCom. Hartnett will retain both titles going forward. Spagnolo will be working on "new projects" with MCI WorldCom CEO Bernard Ebers, a UUNET spokesman said. No additional details were provided regarding Spagnolo's new position or why WorldCom decided to make a change at this time. Hartnett joined WorldCom when it acquired MCI in 1998.

**UUNET CEO Mark Spagnolo has moved on to new projects at MCI WorldCom.**

**IBM pumps up portal offering**

IBM last week upgraded its enterprise information portal (EIP) offering by expanding access to more data sources. Version 7 of the IBM EIP includes an upgraded application programming interface that can interact with C++, ActiveX and Lotus Script code, in addition to the previously supported Java and Java Beans. IBM has added transcoding that allows devices such as cell phones and Palm Pilots to access the portal. EIP can also display virtually any document type in the browser window. IBM is putting \$100 million behind the product to enter what Summit Strategies estimates is a \$14 billion market for portals. IBM EIP 7 will be available in August.

**Heavyweights back Digital Island**

Microsoft, Compaq and Intel have invested \$45 million in content delivery network provider Digital Island, which will use the money to build a network capable of handling 7.5 million simultaneous streams. Digital Island has points of presence in 25 countries that are used to get high-bandwidth content closer to the edge of the network. The enhanced network will be powered by Compaq servers running Windows 2000. In addition to its initial investment, Compaq Financial Services will provide a \$50 million equipment lease. Digital Island's biggest competitor, Akamai, recently signed a deal with Cidra that will let the company offer a satellite-based streaming media option.



operation the next day, but it didn't respond to inquiries to explain the incident.

**Commerce One buys AppNet**

Commerce One last week signed an agreement to purchase AppNet of Bethesda, Md., a systems integrator specializing in business-to-business e-commerce sites, for approximately \$1.4 billion. AppNet Chairman and CEO Ken Bajaj said the acquisition would not affect current AppNet projects. Commerce One's chairman and CEO Mark Hoffman said his firm needs to add business-to-business systems integrators to keep up with service demand to build the 100 or so trading exchanges based on Commerce One software products.

**Study puts \$11 billion tag on rural DSL**

The National Exchange Carrier Association last week released a survey showing it would cost nearly \$11 billion to upgrade rural telephone lines to broadband DSL capability. The

results of the survey of NECA member companies were released at a news conference at which officials also said a search had begun for funding to help companies serving rural areas pay for the upgrade. The 244 companies that participated in the survey serve sparsely populated regions of the U.S., from the bayous of Louisiana to the mountains of Alaska, said Victor Glass, NECA's director of demand forecasting and rate development. Typically, there are about five households per square mile in the companies' coverage area. That figure compares with the typical 50 households per square mile in the coverage area of carriers that serve urban areas. The \$11 billion would cover 3.3 million lines, which is equivalent to an average cost of about \$3,300 per line. However, Glass says the estimate is deceptive because the more remote a customer is, the higher the price to upgrade the line.

**Omnexus announces tech providers**

IBM Global Services, Ariba and i2 Technologies will provide the technology behind Omnexus, a planned business-to-business marketplace for the plastics injection molding industry announced by BASF AG, Bayer AG, Dow Chemical, DuPont and Ticona/Celanese AG. The three technology vendors will also provide ongoing service and support after the exchange gets started later this year, according to Omnexus.

**Nike fends off 'hacktivists'**

Shoe manufacturer Nike last Wednesday found its e-commerce site [nike.com](http://nike.com) hijacked by Web "hacktivists" espousing a political protest message against the upcoming Asia Pacific World Economic Forum. The [nike.com](http://nike.com) URL was redirected to the URL of an Australian activist group, which denied responsibility for the domain-name hijacking. Nike restored its [nike.com](http://nike.com) Web site to normal

# NaviSite debuts service for B2B marketplaces

*Fr@mework Program gives range of capabilities.*

BY APRIL JACOBS

Application service provider NaviSite plans to break into the business-to-business arena this week with a program designed to give users a way to streamline the process of setting up and maintaining their online sites.

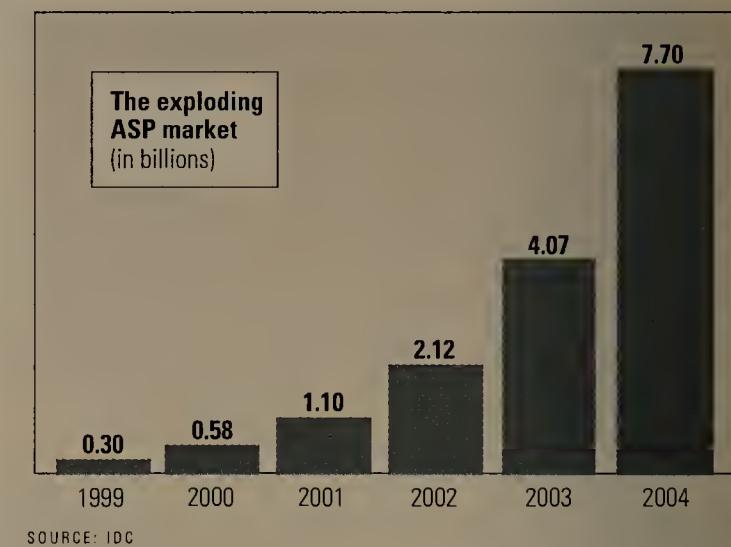
NaviSite's Fr@mework Program will give end users a

oped and had its site running in about six months — about six months sooner than company executives expected.

FuelStop's Chief Architect Anne Bernick says the company decided to use Fr@mework Program because the company would get end-to-end services such as site development, including application development and inte-

## ASP explosion

**As an increasingly large number of end users turn to ASPs for their Internet services, the market for ASPs is expected to grow an average of 91% each year through 2004.**



point of contact for software applications, hosting, integration and managed services required to build and launch high-end, commercial online marketplaces. Companies are using business-to-business sites for everything from purchasing manufacturing components to office supplies. The sites reduce the amount of paperwork and time customers spend on the telephone, as well as providing companies with more options for purchasing — which can reduce overall costs.

For example, at FuelStop.com, buyers and sellers of energy products, such as gas and oil, can use FuelStop's business-to-business site to make deals and compare prices. Using NaviSite's Fr@mework Program, FuelStop devel-

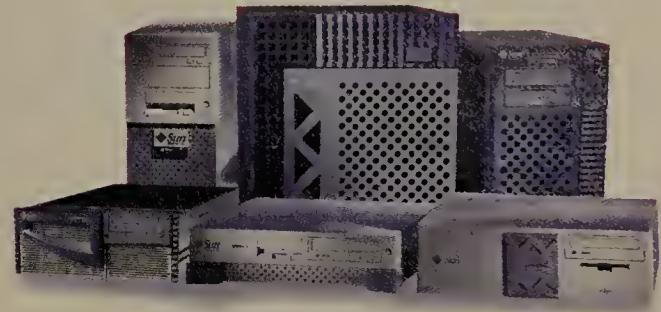
gation, systems integration, maintenance and ongoing support.

FuelStop worked with NaviSite and Fr@mework Program members Iadapt and Granitar to design its business-to-business site for fuel exchange. Iadapt provided application development, while Granitar provided system integration. For its part, NaviSite provides managed hosting, server and application services for ongoing support, including 24-7 monitoring and problem resolution.

Observers say the business-to-business market will continue to grow. Forrester Research predicts that \$1.4 trillion in trades will flow through online markets in 2004. Right now, about 72%

See **NaviSite**, page 10

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# Storage interoperability standards emerging

BY DENI CONNOR

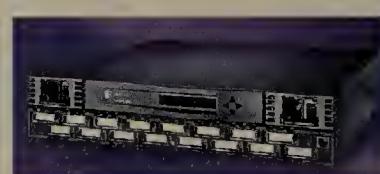
Storage specifications are starting to emerge that may make it easier for IT managers to assemble and install their own storage-area networks and network-attached storage.

Fabric Shortest Path First (FSPF) and Direct Access File Specification (DAFS) are the first standards that let different vendors' Fibre Channel switches interoperate and let data be delivered faster from applications. Analysts say the standards will make it possible for users to design, install and implement SANs and NAS from components instead of buying turnkey packages from vendors.

To advance interoperability, individual storage and system vendors have also set up interoperability labs to test storage

switches, hubs, host bus adapters and disk arrays with their own equipment. EMC, StorageTek, Brocade Communications and Compaq are among those participating. While the labs are focused on proving interoperability between the vendors' storage equipment and other devices, none of the labs are open to testing any server operating system with any storage device that has an interconnected router or switch.

"Standards are very important to us, period," says a storage resource manager for a large retailer in the South who asked not to be named. "From a buying standpoint, we realize that standards are not going to be in place in time for us, and [our company] is going to go ahead with SANs knowing that whoever we go with today will be



Brocade has added support for the Fabric Shortest Path First protocol to its SilkWorm switches.

proprietary. In the future, [the market] will open up so we can realize our goal of putting together a plug-and-play SAN."

FSPF is the result of a collaboration between Brocade, Gazzoox, McData, Ancor and Vixel to make their switches work together. Similar to the Open Shortest Path First protocol used by most IP router vendors, FSPF lets routing tables act as maps for routing traffic through the network in the most efficient manner. The protocol was

submitted to the ANSI earlier this year. FSPF should be codified into a standard by year-end. Brocade has implemented FSPF in its SilkWorm switches, and other switch manufacturers will include it in their products by year-end.

DAFS is a high-level protocol for file-by-file transfer of data across the network directly between client and storage memory. Use of the protocol will increase the speed of the network and relieve the system CPU of processing overhead, especially in hungry database and multimedia applications. It is based on the Virtual Interface Architecture designed by Microsoft, Compaq and IBM, and is independent of the Ethernet or Fibre Channel protocol and media that is used.

Network Appliance, Seagate Technologies and Intel drafted the DAIS proposal. DAIS will ultimately replace the Network File System (NFS) protocol used by NAS devices. Users should see the first implementations of

DAFS-compliant NAS devices by the middle of next year.

"DAFS is simply providing a better mechanism than NFS for NAS file service," says Steve Duplessie, an analyst with Enterprise Storage Group in Milford, Mass. "Standards like DAIS and FSPF give us one way to do something without learning something new each time we buy a product. For instance, if I know how to zone a Brocade switch, I know how to zone a Vixel switch."

Both protocols, while speeding the data network and making it more manageable and interoperable, don't cover interoperability issues that are necessary for SAN and NAS operation. Neither protocol addresses the switches exchange of storage array zoning or partitioning information, how devices join the network or which switch becomes the principal switch on the network and thus is in control of data exchanges. There is also no way to identify a distributed name server or how domain ID assignment takes place. The Fibre Channel Industry Association is working on these issues. □

## IBM's Piranha to show its storage teeth

New device includes up to 1 terabyte of storage capacity.

BY MARC SONGINI

NEW YORK — IBM is introducing a set of storage-area network offerings to appeal to midsize companies that rely on Intel-based servers to do e-business.

This week at PC Expo the company is expected to announce a new storage server optimized for Windows NT and 2000 and Linux operating systems, as well as a series of packaged software service and hardware offerings.

A year after it announced that it would provide SAN products for mainframe users, the company is now hitting the entry level of the market. As part of this thrust, IBM will announce the Netfinity Piranha storage device, which will let Intel server users connect their machines to high-performance SANs — without having to spend hundreds of thousands of dollars on a high-end device such as the top-of-the-line Shark Enterprise Storage Server.

Piranha features up to 1 terabyte of storage capacity and can support up to four servers. Priced at less than



\$8,000, the box fits in below the recently announced Tiger Shark FAST500 storage box for RS/6000 users. The Piranha will be available in August, according to IBM.

Piranha could be particularly interesting to enterprise IS staff who want to have a dedicated SAN for remote workgroups or departments or business processes that are using Windows or Linux servers, says Joe Poole, an IS manager at Boscov's department store, based in Reading, Pa. The firm currently uses a

Shark Enterprise Storage Server that handles data from a mainframe, an RS/6000 and three Windows NT servers. He says in his network, a Piranha, with its low cost, might be used to support the company Web site.

IBM also intends to introduce a series of so-called SmartPaks — bundled storage management, testing and implementation packages for enterprise users. The packages eliminate the need to pick individual products and services one at a time. The hardware and software will be installed by IBM Global Services personnel or certified resellers.

Each offering is optimized for a specific SAN function: data consolidation, data protection, disaster prevention or file sharing. The SmartPaks are available now. SmartPak bundles range from \$16,000 to about \$1 million.

IBM: [www.ibm.com/san](http://www.ibm.com/san)

**NaviSite,**  
continued from page 8

of business-to-business sites use homegrown applications, and 40% use some manual processes, such as manually matching bids to suppliers.

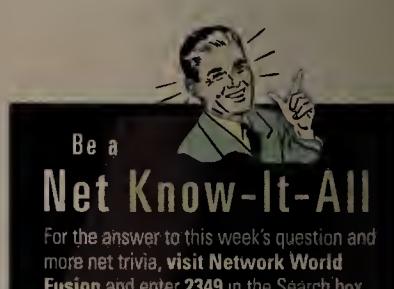
Fr@ework Program includes the following services:

- Application development platforms from Iadapt and SilverStream.
- ASPs, such as NewChannel, for customer acquisition.
- PurchasingNet, for eProcurement.
- ILUX, which supports campaign development.
- Synchrony, which provides customer relationship management.
- InvoiceLink, for online payment.
- Optika, for settlement resolution.
- NetGenesis, for marketplace operational analysis.

Clay Ryder, an analyst with Zona Research in Redwood City, Calif., says the market for business-to-business services will grow because outsourcing is almost always less expensive than setting up a site from scratch.

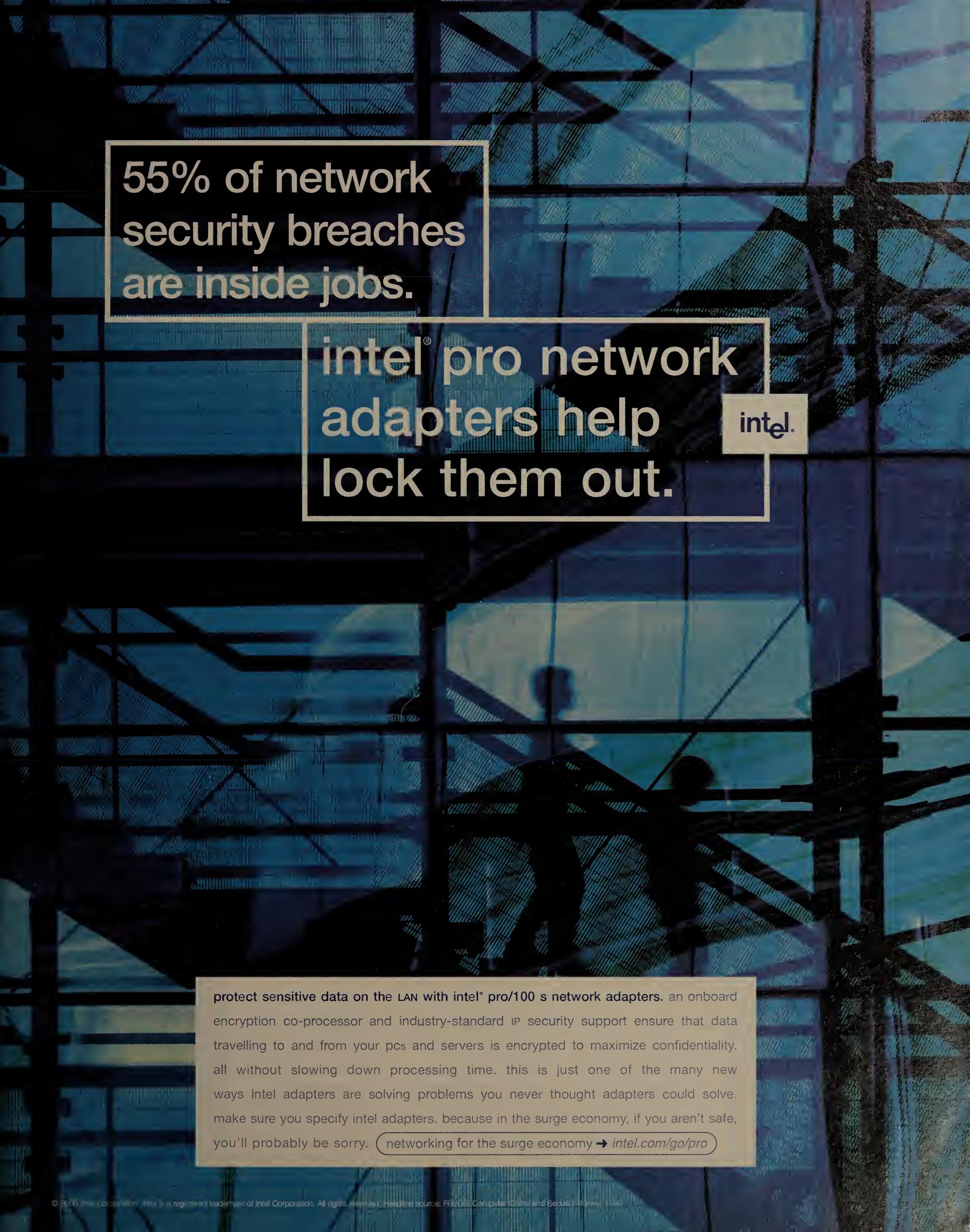
"The advantages for end users are cost and speed," Ryder says. Companies like NaviSite, which put together business-to-business sites as a core business focus, will have more efficient practices in place, he adds. Also the resources available make it less expensive than a company doing one-time development and deployments.

Navisite: [www.navisite.com](http://www.navisite.com)



**This week's question:**  
Who is credited with choosing the @ symbol for use in e-mail addresses?

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# Fiorina: OpenView key to HP 'Net plans

HP announces Linux, e-transactions services and support.

BY MARC SONGINI

OpenView is central to all of Hewlett-Packard's Internet software plans, according to the company's top executive, Carly Fiorina.

The head of HP last Tuesday afternoon addressed via video-conference a group of 2,000-plus users at OpenView 2000, a trade show held at the Orange County Convention Center in Orlando, Fla. Although known primarily as a hardware firm, HP has recognized the importance of its software business, Fiorina says, and OpenView in particular.

The network management

platform has been one of HP's most solid success stories, with its 120,000 installations and inclusion in some of the largest nets and ISPs in the world.

Of late, the company has been bolstering its software lineup, adding Web quality-of-service and security products to its roster. Like Tivoli and Computer Associates, HP claims it is trying to accommodate users who are moving to a 'Net-based business model and offering some type of e-service, such as an application or service delivered over the Web.

The OpenView management brand is going to be the center

piece of the firm's strategy, providing centralized security, application and service-level agreement management to enterprises and service providers, HP says. The company is emphasizing it will let IS staff monitor and manage Internet transaction processes from beginning to end.

These are steps in the right direction, says Jim Hanrahan, director of enterprise services at application service provider elcom.com, an Internet-based procurement company in Norwood, Mass. In fact, he would like to see OpenView go even faster in adding more devices and applications to its reper-



Carly Fiorina told customers last week that OpenView remains central to HP's plans.

toire. His company's network is constantly changing, he says, and as he adds routers or new disk drives he would like to see OpenView keep pace.

Indeed, while some observers claim network platform vendors are in decline, losing market share to individual product firms, HP executives were upbeat about OpenView. Newly installed General Manager Patty Azzarello assured users in her keynote that OpenView was seeing accelerated growth. However, she does want to make some changes.

For instance, she said she wants to see OpenView recognized as a premier product in its own right, not just an adjunct to HP's hardware business. This will require a lot of marketing. She also wants to exploit the parent company in various ways; one example could include sending OpenView representatives on sales calls with regular HP salespeople, instead of them working separately.

Azzarello added that HP's work to make the separate applications under the OpenView umbrella interoperate with one another is continuing. There also is a need to make some changes in how the company delivers mainframe management capabilities. HP relies on Sterling Software's Big Iron management software, but rival Computer Associates acquired that company, so it's time to come up with a new plan.

## Products and services rollout

As expected, HP announced the addition of a new series of Smart Plug-In modules to manage Linux servers and applications ([www.nwfusion.com](http://www.nwfusion.com), DocFinder:8740), as well as enhanced Internet-based services.

The company also announced new features in OpenView VantagePoint 6.0, an e-business management application. The suite will let IS staff pinpoint where a failure in a transaction is occurring, whether in the network or in the ISP cloud. IS staff will also be notified if users can't execute transactions or if response times are lagging. The enhancements should be available next month.

Vantage Point starts at \$20,000 and runs on Unix and Windows NT servers.

HP: [www.opcview.hp.com](http://www.opcview.hp.com)

# Oracle to pump up e-business software

BY JOHN COX

Oracle this week will unveil a sweeping set of middleware products, with new packaging and pricing, to fill in the missing pieces of its plan to become the leading supplier of e-business software.

But customers will be looking to see how easy Oracle actually makes it to interact with other third-party products — an increasingly urgent need as customers stitch together different businesses in electronic business relationships.

Company officials wouldn't comment on the announcement, but the centerpiece of the product offerings is likely to be the Oracle Integration Server (OIS), first announced last fall but not yet released.

OIS is intended as a linchpin that holds together an array of interfaces and services that are needed to interconnect Oracle database applications with other middleware products and applications.

OIS includes:

- The Lightweight Directory Access Protocol-compatible Oracle Internet Directory.
- Oracle Message Broker, which implements the Java Message Service for application-to-application messaging.

• A set of drivers to other message-queuing products, such as IBM's MQSeries.

• Oracle Workflow, for coordinating business processes, such as placing an order, and a set of modeling tools for creating these processes.

• Data transformation services to coordinate how different applications represent such things as "customer" and "order."

• Adapters or interfaces to at least some products, such as

services that are part of the Java platform, including the Java Transaction Service and Java Naming Directory Interfaces.

But OIS (as well as Oracle Application Server) relies on features built into the Oracle 8i database, including what the company calls Advanced Queuing, which is an application-to-application messaging system residing in the database itself.

**■ "Enterprise customers may have 40 years of domain knowledge in their mainframes. That's an immensely valuable ... resource."**

Fred Meyer, vice president of product, Tibco Software

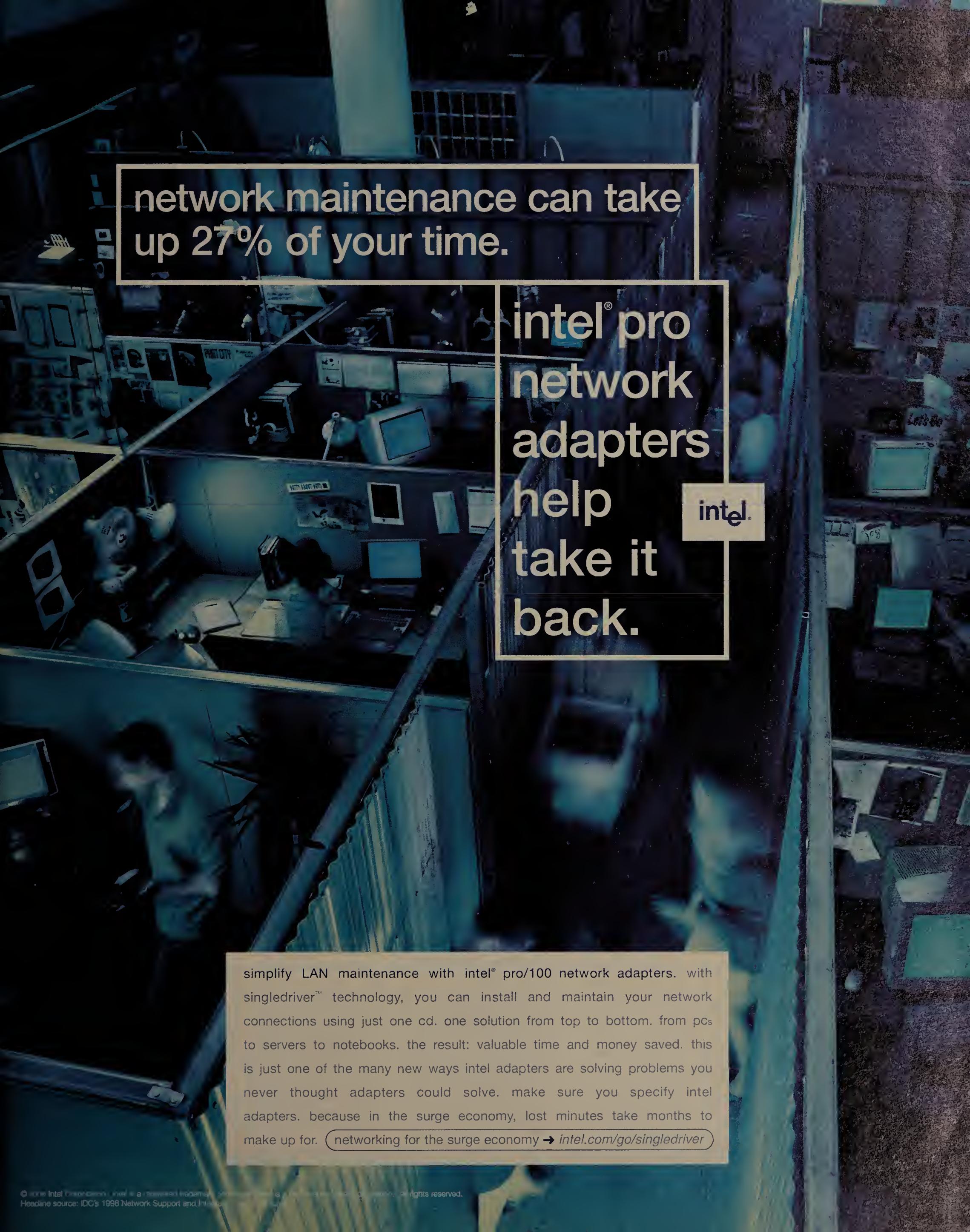
SAP AG's R/3 enterprise resource planning offering.

Other elements of the middleware plan include Oracle Application Server, which hosts applications written as collections of components called Enterprise Java Beans, and Net8, formerly called SQL\*Net, which lets Oracle database applications run over an array of network protocols.

OIS and Oracle Application Server rely heavily on APIs and

Oracle officials contend that putting this messaging structure in the database increases the reliability of the system and stores valuable data about the messages themselves.

But it's precisely this decision to center the middleware strategy on the Oracle database that may be problematic for some. In effect, Oracle's approach is to treat all complex elements of interrelated applications like parts of an Oracle



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# Vendors provide intranet security and privacy

BY ELLEN MESSMER

Check Point Software and Secure Computing this week are proposing separate means to let trading partners gain restricted access to corporate intranet applications.

Check Point's strategy, called "Secure Virtual Network Phase II," centers on its VPN-1 firewall/VPN gateway's ability to share user authentication information with the applications behind the firewall to gain benefits such as single sign-on.

The VPN-1 gateway can capture information about each user offering evidence

of his identity through means of a digital certificate, static password or dynamic-password security token.

## Growing authority



Check Point's technology ensures complete security and privacy for all vendors using the Check Point VPN-1 firewall/VPN gateway. With Check Point's technology, authorization management product vendors will be able to share encrypted user authentication data with applications or authorization-management servers behind the firewall without fear of a data leak.

"The VPN-1 gateway knows who I am and where I came from," says Check Point Senior Product Manager Tom Clare.

He says this information can, in theory, be transmitted to applications or authentication-management servers

"UserAuthority" software APIs that could be embedded into applications to accept VPN-1 data.

The technology would work to restrict user access to Web applications running on these servers after the user is authenticated at the VPN-1.

VPN-1 can determine user identity, profile, location and device used. The application-use security policy would be enforced at the VPN-1 gateway outfitted with a new software module.

The first version of the UserAuthority module — expected next month — will

include the UserAuthority Internet Server API plug-in for the Microsoft Internet Information Server with a similar plug-in for the Netscape and Apache Web servers in the future.

Several vendors, including BroadVision, Oracle and IBM, have indicated strong interest in deploying Check Point's approach (see graphic).

BroadVision says the business-to-business applications, including one called Procurement that will ship this fall, will use the Check Point security capabilities, though it's uncertain UserAuthority will make it into the first version of Procurement.

"Our customers need access to the network, and we've chosen Check Point as the partner in managing that access," says Asher Kotz, BroadVision's technology partner manager.

Even vendors with their own authentication-management products, including Netegrity and Securant, say they are interested in implementing UserAuthority.

Securant Chief Technology Officer Eric Olden says his firm plans to add the UserAuthority API to its ClearTrust Web-access control software by year-end.

"This isn't a threat to us, it's augmenting what we do in the business-to-business transaction market," Olden says. "It will save the user having to authenticate the second time."

"Interesting things are happening here with the ability to let the end user authenticate once," says Richard Karon, security architect at Plano, Texas, systems integrator Perot Systems.

"The application would become aware of the central security model. You'd have to have a repository to hold that information, though, either on the firewall or in a directory," he adds.

Another established vendor, Secure Computing, also has ideas about application-access control, is planning to ship a product this week.

Secure Computing's Safe-  
See Security, page 108

# Nortel unveils 'Wings of Light' wireless plan

Allies with HP, unveils software to foster untethered Internet access, mobile e-services.

BY JIM DUFFY

PARIS — Nortel Networks last week launched a wireless Internet strategy that is intended to let mobile users access data and applications as if they were in a fixed location.

The strategy, dubbed Wings of Light, is intended to marry Nortel's optical networking prowess with mobile wireless technology. Wings of Light includes an alliance with Hewlett-Packard to develop wireless Internet access products and create mobile e-services, as well as software to maintain users' Internet connections as they roam.

Under the alliance with HP, the companies will work together to develop mobile portal products. The initial offering will be a mobile portal that combines each company's computing, middleware and appliance clients to enable Internet access across Nortel's wireless and optical infrastructure. The portal will be designed to let users roam between networks without losing their Internet connection or IP address.

The product will be available by year-end, Nortel says. The mobile portal offer-

ings will use HP's Mobile E-service commerce platform, which comprises HP-UX and Windows NT servers running the Wireless Application Protocol (WAP). The platform supports conventional Internet and wireless transactions, and includes tools that enable developers to create, deploy and manage e-services.

The mobile portal client package will include WAP phones, and Windows CE and Palm OS handheld devices.

According to Nortel, the global market for wireless infrastructure is expected to reach \$200 billion by 2003, and the market for mobile portals is predicted to reach \$11 billion by 2003. Nortel projects that 300 million users will access the Internet via wireless means by 2004.

The Nortel and HP portal will include voice capability, compression, security and quality of service, and enable access to enterprise resource planning, customer relationship management, database, e-mail and voice mail content. Nortel and HP say they are also exploring other wireless Internet opportunities, including "m-commerce" offerings. These offerings will allow businesses to integrate

their sales, marketing and service capabilities with the Internet, Nortel says.

HP also will provide integrated payment systems to enable secure electronic transactions over wireless devices connected to Nortel's wireless and optical infrastructure.

In addition, the companies plan to combine Nortel's 2.5G and 3G wireless infrastructure products with HP PCs using Nortel's e-mobility Acceleration software and IP Mobility middleware, which was also announced last

week. This effort should result in products that deliver content that is optimized according to an end user's location, network and device, Nortel says.

E-mobility Acceleration software is a client/server compression program that includes a Windows-compatible client residing on a laptop computer, and a proxy server within a corporate intranet or service provider network.

Nortel's new IP Mobility software enables users to access the Web while roaming, and have personalized content follow them across wireline and wireless IP networks as they move from building to building or from network to network using different handheld devices, laptops and appliances.

IP Mobility complies with the Internet Engineering Task Force's Mobile IP specification, and incorporates centralized directory management, security, device independence and application independence.

IP Mobility runs on Nortel's Shasta switches and will be available in 2001. The company did not disclose pricing.

Nortel: [www.nortelnetworks.com](http://www.nortelnetworks.com)

## Full of air

### Elements of the Nortel/HP wireless Internet alliance:

- Development of mobile portals based on HP Mobile E-Service commerce servers.
- "M-commerce" offerings integrating sales, marketing and service capabilities with the Internet.
- Compatibility of Nortel's 2.5G and 3G wireless infrastructure products with HP PCs, using Nortel's e-mobility Acceleration software and IP Mobility middleware for products that deliver content optimized to an end user's location, network and device.

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# Merger mess: Ebbers running out of options, time

Few, if any, core Sprint networks, except wireless, are now likely to become part of MCI WorldCom.

BY DAVID ROHDE

WASHINGTON, D.C. — With regulators in the U.S. and Europe due to make public within days their recommendation on MCI WorldCom's proposed acquisition of Sprint, WorldCom CEO Bernard Ebbers appears to have only two options left.

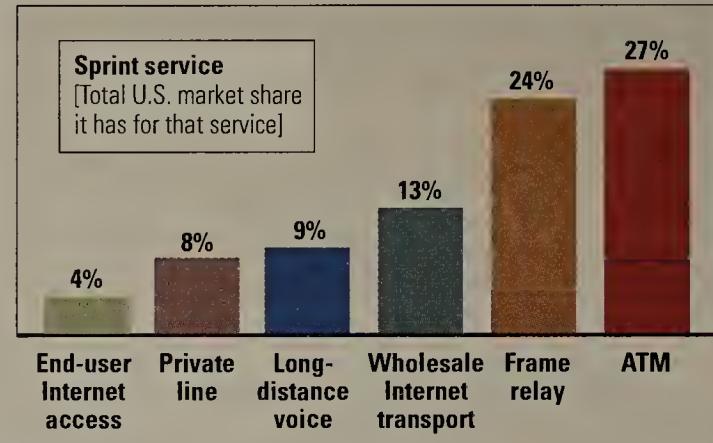
He can either agree to spin off virtually all of Sprint's core voice and data network services except wireless to a third party, or he can just call the whole thing off.

That was the scene as European Competition Commissioner Mario Monti — the European Union's equivalent of the chairman of the Federal Communications Commission — prepared to travel to the U.S. for final talks with U.S. regulators and the merger partners.

The European Union was widely reported last week to be set to vote down the merger on grounds that it

## Up for grabs?

Even if MCI WorldCom does buy Sprint, the main parts of Sprint that enterprise customers employ will likely go to a third party:



SOURCES: Dataquest, IDC, FCC

would leave WorldCom the dominant global carrier for Internet and related transport services.

Sources say the European Union is not satisfied with WorldCom's earlier offer to spin off Sprint's Internet busi-

ness. At a minimum, the European Union wants any party that would buy Sprint Internet to take Sprint's complete fiber network and portfolio of long-distance voice and fast-packet services as a counterweight to WorldCom's

potential dominance.

If the European Union and U.S. Department of Justice approved the merger with such a condition, that would mean Sprint's large base of frame relay and ATM customers as well as Sprint Internet users would no longer have to ponder life under the WorldCom flag.

But all those Sprint users would still face the uncertainty of who will own their networks in the future, because even if the merger collapses, the component parts of Sprint are still expected to be up for sale to someone else (www.nwfusion.com, Doc-Finder: 8737).

A WorldCom spokesman would not comment on whether WorldCom has proposed to spin off all of Sprint's long-distance assets, adding only that "communications continue" with the European Union, the Justice Department and the FCC. But WorldCom's own sales repre-

sentatives have been passing the word that negotiations have moved in this direction, others say.

"That came up in a negotiating meeting with local branch managers with MCI WorldCom," says Dick Kuehn, president of RAK Associates, a Cleveland firm that negotiates carrier contracts for users.

"They said we're looking at getting rid of everything [from Sprint] except wireless," he adds.

The fundamental problem facing all the decision-makers in the merger endgame is that for all the previous talk of Sprint's Internet business adding to WorldCom's Internet market power, Sprint actually contributes more raw market share to the proposed merger in services like frame relay and ATM (see graphic).

In both services, a WorldCom/Sprint combo would overtake AT&T as the No. 1

service. In both services, a WorldCom/Sprint combo would overtake AT&T as the No. 1

service.

There was still one remote scenario last week that could result in WorldCom corraling Sprint's frame relay and ATM customers. That would involve the merger closing, Sprint selling off its long-distance networks, but then leasing them back while retaining the voice, frame relay and ATM customer relationships.

Observers say they'd prefer a cleaner solution.

A potential spinoff of multiple Sprint services to an unknown third party could leave Sprint customers even more nervous than a WorldCom fusion, "because they wouldn't know where they're going or why," Kuehn says.

On the other hand, he says such a scenario could be ideal for non-Sprint customers, who would retain the option to negotiate contracts with WorldCom and whichever new carrier buys whatever Sprint spins off.

A Sprint spokesman did not respond by press time. □

# Microsoft unveils grand Internet platform plans

Net to feature new operating system and server applications.

BY JOHN FONTANA

REDMOND, WASH. — Come hell or high water, Microsoft will completely overhaul its software over the next two years in an effort to mold Windows into a platform for the Internet, the company said last week.

Microsoft made the declaration at its Forum 2000 event as it unveiled its new .Net (pronounced Dot Net) platform, which had been code-named Next Generation Windows Services. .Net will be defined by a new operating system, server applications and development tools, all heavily spiced with XML. The .Net platform will support software that runs as services over the Internet and executes on a host of intelligent devices.

With .Net, users will be able

to customize the information they receive, when they receive it and how they view it on any number of devices. Enterprise customers will be able to build applications that support numerous clients and incorporate into applications chunks of program logic that exist on the Internet.

"This is completely a new platform and will affect every piece of code written," says Bill Gates, chief software architect for Microsoft. "There is no Microsoft product that won't be touched."

Critics say the company-wide integration effort flies in the face of Microsoft's current legal troubles. But others say .Net validates what is already happening in the industry, including similar initiatives by the likes of Sun, IBM and Hewlett-Packard.

XML will become part of everything Microsoft does over the next 24 months as it turns its servers and applications into .Net products. Along with that, the company will develop intelligent clients, such as tablet PCs, that can execute some amount of logic. The effort is in contrast to other services models, in which the logic runs only on the server.

"Microsoft continues to make a case for the intelligent client," says Dwight Davis, an analyst with Summit Strategies in Kirkland, Wash. "That will resonate in a world where you can put computing power in many devices. If they can balance computing between the client and the server, they could have a compelling message."

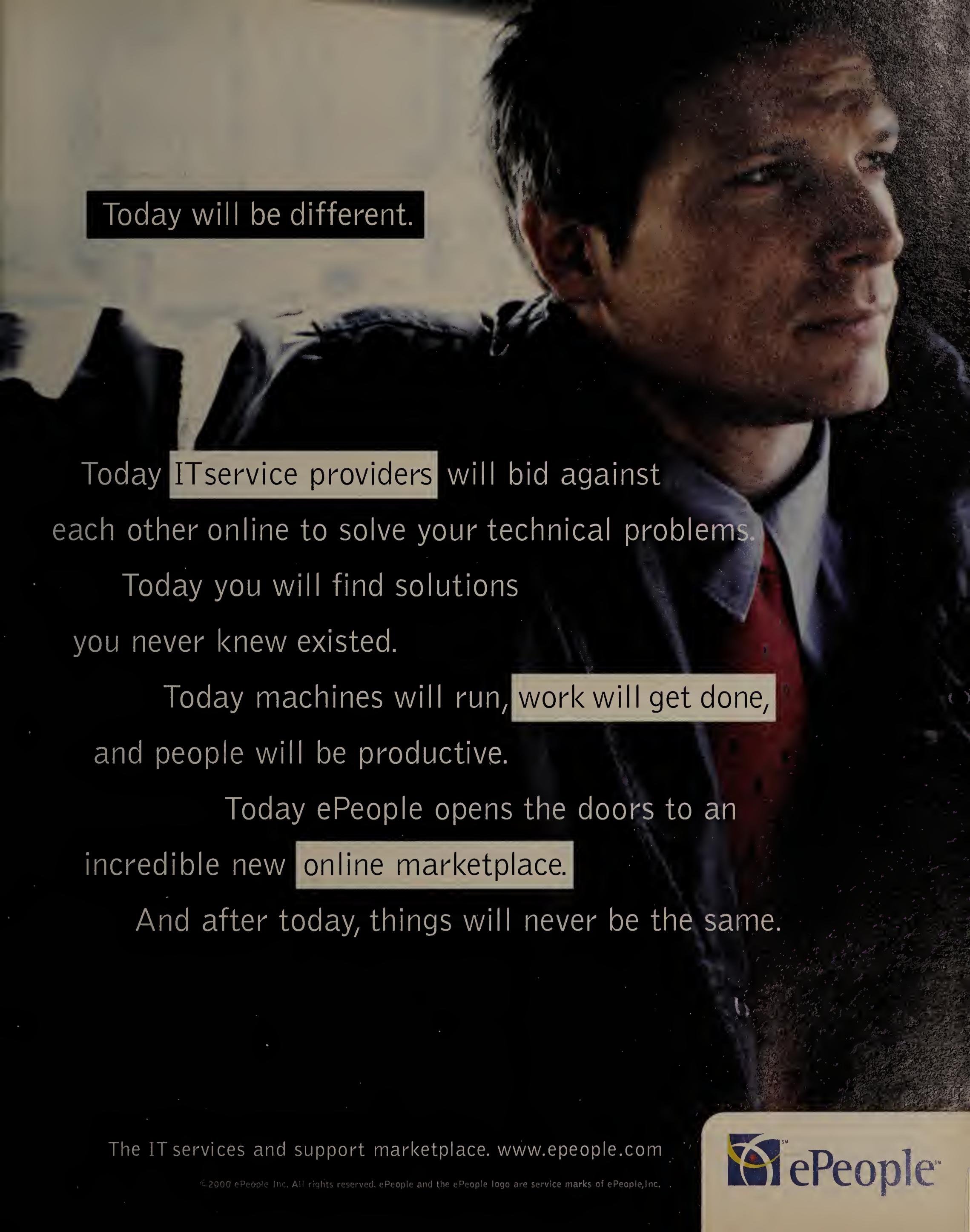
The .Net transformation



Microsoft's Bill Gates says the company's new .Net initiative will touch every one of its products.

will begin this year when Microsoft delivers its XML-based BizTalk Server 2000 and Visual Studio 7.0, which will

See Microsoft, page 106

A black and white photograph of a man in a suit and tie, looking down at a computer screen. The screen is visible in the upper left corner, showing some text. The man has a serious expression. The background is slightly blurred.

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## Honeywell

Continued from page 1

tables and personal gardening plots when it opens in September.

The walls will be multicolored, and the furniture movable. The cafe will be the new-fangled workspace for a team of Web developers creating MyHoneywell.com, a portal for Honeywell's 120,000 employees.

The cafe's goal is to attract high-tech talent that might otherwise find Silicon Valley or Seattle preferable to this leafy, well-to-do New Jersey suburb.

"We want to have a Web-centric culture internally," says Bask Iyer, who oversees My Honeywell.com as the vice president of e-business for Honeywell's Global Business Services group. "Even the architectural designs for the cafe are helping us recruit the right kind of people."

Welcome to the New Honeywell, which has come a long way from its pocket-protector past. In the past year, the \$24 billion electronic equipment maker has embarked on a dramatic and far-reaching plan to convert to an e-business model even as it closed a merger with AlliedSignal.

Honeywell's e-business strategy has three components:

- Electronic trading hubs — MyPlant.com, MyAircraft.com and MyFacilities.com — that offer products and services from Honeywell and other vendors to key industrial customers.

- MyHoneywell.com, a self-service Web portal for employees with information on pension plans, 401 (k) savings plans and other benefits.

- A massive integration effort that links customer and employee Web sites with back-end finance, manufacturing and engineering systems.

Central to this e-business strategy is an ongoing network upgrade that includes increased bandwidth at key data centers, a new security infrastructure at all 400 locations worldwide and a fully redundant architecture that incorporates more than a dozen ISPs around the globe.

"The minute you show My Honeywell.com to people they want to jump on it, and the infrastructure gets hit," Iyer says, adding that all the company's e-business efforts

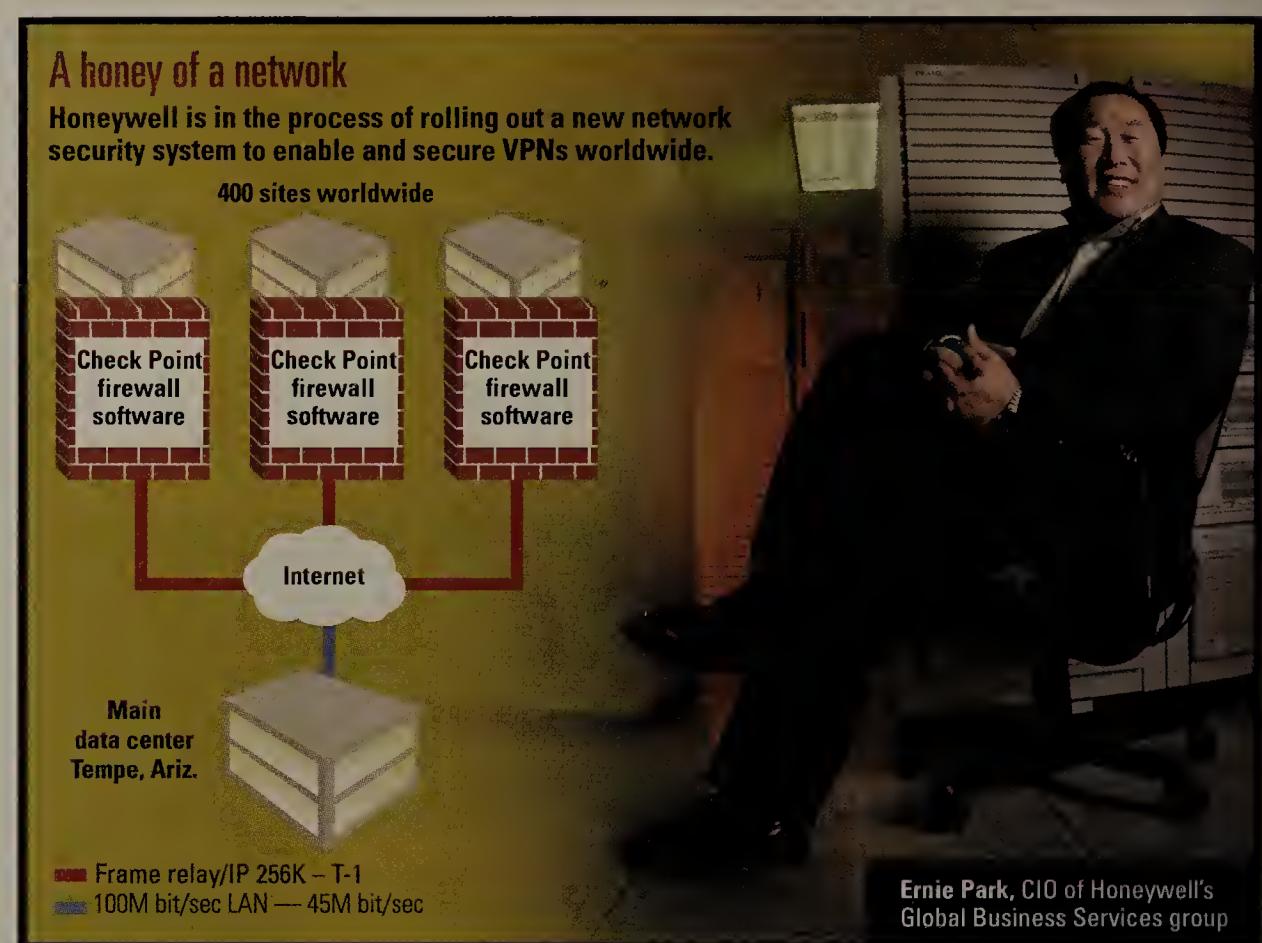
increase network traffic. "People want to do RealAudio broadcasts and video. All of that will have an infrastructure impact."

So far, Honeywell's reinvention efforts appear successful. Prudential Securities ranks the company second of nine multi-industry global manufacturers, trailing only General Electric, in terms of its adoption of e-business methods.

Honeywell is "in the lead in their whole effort to convert their operations over to an e-business company," says Nick Heymann, a senior analyst with Prudential Securities. "They're working very hard to put their whole global supply-chain management strategy in place. Purchasing is pretty much done. And marketing and sales are well under way. This company is going to be a Web-centric corporation by the first half of next year."

MyPlant.com, in particular, has done phenomenally well. With more than 40,000 visitors each month and 300 corporate partners on board, the 1-year-old portal for manufacturing plant managers is on target to contribute \$500 million in incremental revenue by 2003. That's why it attracted the interest of Microsoft, which made an equity investment in February — one of the software giant's first forays into the business-to-business e-commerce arena.

"Honeywell is taking existing applications and moving to a hosted model to allow



Ernie Park, CIO of Honeywell's Global Business Services group

December tapped Russel McMeekin for the temporary post of corporate e-business president. With a skeleton crew of six people, McMeekin is responsible for launching the three e-hubs and integrating them with back-office systems.

He's also in charge of educating Honeywell's business unit presidents on how to make e-business central to their long-term planning.

"We have in excess of 800 e-business type of activities going on within the company," says McMeekin, who describes

is MyPlant.com, which already generates hundreds of thousands of dollars in revenue per month. MyPlant.com was the first Web site for manufacturing plant managers and is considered an innovator, with its mix of products, services and Internet-based monitoring and diagnostic solutions.

MyAircraft.com, which will offer online ordering of aircraft parts, is expected to launch in August. The Web site is a joint venture owned by Honeywell, United Technologies and i2 Technologies.

My Aircraft.com faces challenges from a competing aerospace industry exchange led by Boeing and regulatory hurdles overseas. Nonetheless, Honeywell expects My Aircraft.com to be the first to market in the competitive aerospace sector.

Meanwhile, MyFacilities.com went online June 14 with information for people who manage commercial office buildings.

A full-featured site is due by September and will be modeled after MyPlant.com.

If everything goes as planned with the e-hubs, McMeekin hopes to close his office and disband his staff early next year. "The strategy is that Honeywell will be an e-business company, not that there will be a department within Honeywell that is called e-business," McMeekin says.

### **"E-business has upped the priority of everything we are doing. . . . Now the name of the game is speed."**

Jack Arnold, vice president for corporatewide applications, Honeywell

knowledge workers to do different things through this Web access," says Rebecca Kaske, director of product industries in Microsoft's Business Solutions Group. "Microsoft hopes to provide the underlying platform that runs this exchange and also horizontal services to complement the application functionality."

#### **E-hubs take center stage**

To spearhead its e-business initiatives, Honeywell in

himself as a venture capitalist and an evangelist. "We're trying to understand what those projects are to help define the really good ones and to give them the financial or mental support they need to be successful."

The projects that are getting the most money and attention are the e-hubs, which are independent businesses that will cost Honeywell more than \$100 million this year.

The most successful e-hub

### **Employee portal tackles culture**

While the e-hubs are targeted at Honeywell's industrial customers, MyHoneywell.com is designed to make the firm's employees more productive and satisfied. The Web portal will offer one-stop, around-the-clock shopping for 75-plus benefits when it goes online in July.

Built on an Oracle database engine and Enterprise Java Beans, MyHoneywell.com ties together intranet projects that were scattered across Honeywell and AlliedSignal prior to the merger. The initial version of the site will offer integration with human resources, travel and financial systems as well as some customization features. Full-fledged personalization will be available when the site is updated in the fall.

Honeywell would not release how much money it is spending on MyHoneywell.com, but company officials expect it will pay for itself quickly.

"We are being very conservative by estimating we'll see three to fourfold improvements in productivity due to self-sufficiency in such areas as benefits, employee savings plans and new hires," Iyer says. "That's where you get killed by manual processes."

Honeywell also hopes to boost productivity by encouraging employees to access the

See Honeywell page 20

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## Honeywell, continued from page 18

Web site from home on off-hours. In fact, the company hopes to announce soon an employee PC purchase plan that will provide low-cost home PCs with Internet access.

But the main reason for building MyHoneywell.com is for the company to internalize its e-business strategy. Company officials see the Web site as a major weapon in its battle to change the corporate culture to be more like a dot-com company.

"We are perceived as e-business leaders externally, but we want to be e-business leaders internally, too," Iyer says.

## Back-end integration proves tricky

The least sexy but most important component of Honeywell's e-business strategy is integration of the new Web sites with back-end systems that are being upgraded to take advantage of the Internet's power. These process improvement and integration efforts will let Honeywell save \$375 million this year, McMeekin estimates.

Honeywell's Global Business Services group is linking the e-hubs, which are hosted off-site by GTE, with legacy systems and new enterprise resource planning software from SAP, Oracle and others. This integration effort is the top priority of Honeywell's IT organization, which includes 3,000 people around the world.

"We can't neglect the back-end systems," says Jack Arnold, a vice president responsible for corporatewide applications. "We need to know what we're manufacturing and what our inventory is in order to support a sale online."

Arnold says Honeywell's IT staff is working closely with the business units to re-engineer processes to take advantage of the Internet. In addition to the e-hubs, many Honeywell business units are creating Web sites for particular customers that require supply-chain automation and process improvements.

The IT organization is not only working with e-business leaders to define strategy and

select the technology, but is, in many cases, actually implementing the solution or managing the implementation by a third party," Arnold says.

One reason Honeywell's IT organization moved so quickly on e-business initiatives is that it decided years ago to farm out day-to-day operations of the IT infrastructure. IBM operates and maintains the company's data processing centers, AT&T handles the networks, and a separate division of

to provide a solid communications platform for the corporation prior to the launch of the e-hubs.

Now Honeywell is overhauling its network security infrastructure to support a growing number of customer transactions over the Web. During the next six months, the company will introduce firewall software from Check Point Software running on Sun servers and a private-key infrastructure from Nortel Networks at

The next challenge for Park's group is bandwidth capacity management. Honeywell has already increased its network bandwidth significantly over the past 18 months, upping the connection at its main data center in Tempe, Ariz. 24-fold by replacing a T-1 line with a T-3. Other connections range from 256K bit/sec to T-1 lines. Honeywell is analyzing traffic patterns and redesigning its network architecture to use these connections most efficiently.

"We will end up with 16 [separate ISPs] around the world," Park says. "We'll have redundancy and disaster recovery, and we'll be able to deliver faster response times to customers coming in to our network."

Further out is the need to upgrade Honeywell's LANs, which range from 10M bit/sec Ethernet to 100M bit/sec Fast Ethernet. Park would like to migrate to Gigabit Ethernet, but he doesn't have funding approved yet.

"If MyHoneywell.com wants to distribute video on demand, such as a CEO presentation to all of our employees, we'll have to have Gigabit Ethernet," Park says.

MyHoneywell.com isn't the only e-business initiative to increase Honeywell's network traffic.

Even the e-hubs, which are outsourced, are sending more information to and from Honeywell's back-end systems.

"E-business puts a tremendous burden on the entire infrastructure," Park says. "We are trying to get ahead of the cycle, but that's not always that easy. Our traffic demands grow at an exponential rate." □

**"We are perceived as e-business leaders externally, but we want to be e-business leaders internally, too."**

Bask Iyer, vice president of e-business, Honeywell's Global Business Services group

Honeywell takes care of desktop support. Honeywell's Global Business Services group retains overall responsibility for the IT infrastructure and plots strategy.

Even with the support of outside vendors, Arnold says that it's a challenge for Honeywell's IT staff to keep up with the demands of e-business initiatives.

"E-business has upped the priority of everything we're doing," he says. Customer-facing applications, supply-chain automation, back-end integration have all gotten more important, he adds. "Now the name of the game is speed."

## Network upgrade drives e-business plans

Honeywell's e-business initiatives would not be possible without a network infrastructure that has been upgraded regularly over the past five years. Buildings were rewired, new hubs and routers purchased and bandwidth added

all its locations.

"Eventually, as we are done with the security infrastructure, we'll have many transactions coming in from customers that are authenticated, encrypted and protected from outside hackers," says Ernie Park, chief information officer of Honeywell's Global Business Services group. "That is a key requirement for e-business."

Park says the new firewall architecture also lets employees conduct more activities from home, particularly in support of MyHoneywell.com. In the past, employees had to access Honeywell's networks via dial-up connections. Soon they will be able to access the site directly from their ISP, which will be faster.

Park declined to say how much money the new network security equipment costs, but he admits that Honeywell is "spending multimillions upgrading our network infrastructure to prepare for explosive growth."

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## Correction

A story (NW, June 19, page 10) incorrectly identified Raytheon's new server-based software that monitors internal corporate network traffic to prevent unauthorized transmission of sensitive data. The product is called SilentRunner.

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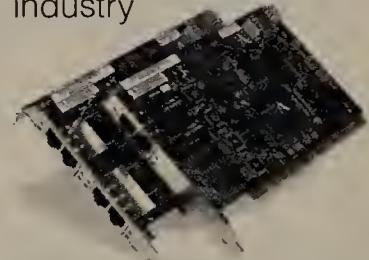


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# Lotus deepens ties to IBM's WebSphere

*Collaboration capabilities of Big Blue subsidiary's Domino server being touted as e-commerce key.*

BY JOHN FONTANA

**SAN FRANCISCO** — Lotus last week used its annual developer's conference to bolster plans to become the collaboration piston in IBM's e-commerce engine.

The Big Blue subsidiary is trying to push its know-how outside corporate firewalls into what it calls collaborative commerce, a sort of online customer service where buyers and sellers can interact before a purchase is completed. The strategy is designed to complement IBM's transaction engine by

## Let's collaborate

**Lotus is laying out a platform that lets customers build "collaborative commerce" into their e-business sites. Some of the key pieces to building the platform are:**

Components	Availability
• Domino R5, IBM WebSphere Advanced Edition	September
• SameTime 2.0, with real-time audio and video support	Fall
• QuickPlace 2.0	Shipping
• XML Tool Kit	Fall

adding a human element to the robotic point-click-purchase procedures of e-business.

To achieve this goal, Lotus said in September it will ship a combination of Domino R5 and IBM's WebSphere

Advanced Edition as a platform for hosting Web-based collaboration and transactions. WebSphere is a Java application server that allows transactions to be managed using Enterprise JavaBeans.

Java is one of the ways IBM is interconnecting its software portfolio into a broad base to support e-commerce.

"We are aware that we can't do the big jobs, the transaction things, in Notes," says Paul Cottier, consulting analyst with the Federal Reserve Bank of Cleveland. "We are hoping that WebSphere becomes our standard platform for commerce

applications, but we want to continue to be able to deploy quick Notes applications. We hope they can integrate these products successfully."

The intent is to combine the two products while still allowing customers to run each server as a stand-alone product.

Later in the year, Lotus and IBM plan to complete the integration of Domino and WebSphere to include directory services, security and common Object Request Brokers. Domino R5 already ships with the standard version of WebSphere, which integrates Java Servlets between the two platforms.

"The real key is marrying WebSphere transactions to Domino collaboration to form the underpinnings of collaborative commerce," says Bart Lautenbach, director of Web applications for Lotus. He says the collaboration Lotus can provide will help establish trust between buyers and sellers in online marketplaces.

While Domino and WebSphere are the hub of the strategy, Lotus is adding other collaboration features to help build that trust. Last week, Lotus previewed real-time audio and video capabilities for its instant messaging server SameTime 2.0, which is expected to ship this fall. The intent is to create face-to-face Web-based customer service. Last week, Lotus shipped QuickPlace 2.0, which allows buyers and sellers to create virtual negotiation rooms supported by Domino workflow.

Lotus will also provide tools for developers, including an XML Tool Kit for Domino. Developers will build applications that could import and export XML to present Domino to outside systems, especially for cross-platform workflow. The tool kit will ship this fall and an evaluation copy was made available last week on the Lotus Web site. Later this month, Lotus will add to Domino support for Macromedia's Dreamweaver Web-development tool. Lotus also will release Domino Design Components for Dreamweaver that allow Domino views to be added to a Web page.

Lotus did not reveal pricing for any of its upcoming products. □

# Project Oxygen to breathe life into networks, apps

BY JOHN COX

**CAMBRIDGE, MASS.** — Six companies last week pledged more than \$25 million to a Massachusetts Institute of Technology project aimed at reinventing computing for the Internet.

Project Oxygen was launched last fall to collect and advance an array of technologies for mobile devices and network-based applications. The goal, members say, is to make computers easier to use, less expensive and smarter.

Oxygen is a project by the MIT Laboratory for Computer (LCS) Science, with additional researchers drawn from MIT's Artificial Intelligence Laboratory. Altogether, 250 researchers are involved in the five-year, \$50 million project.

Joining the Oxygen Alliance last week were: Acer Group, a leading PC and components builder; Delta Electronics, a manufacturer of components and power supplies; Hewlett-Packard; NTT Group (formerly Nippon Telegraph and Telephone, Japan's biggest telephone company); Nokia, the Finnish-based cell phone and wireless net builder; and Philips Research, an arm of Philips Electronics, the Dutch consumer electronics giant.

The project's advocates envi-

sion a world where Oxygen provides the essential technology underpinnings to deliver to a given user the exact information or capabilities the user needs at a particular moment, in a particular location.

Elements include:

- Mobile computing devices with voice and advanced visual user interfaces.
- Stationary devices, such as computers, displays and sensors, those embedded in offices, homes, public spaces, vehicles and the like.
- Secure nets that can support a range of communications protocols, and can form and dissolve as needed.

This will take more than improved speech processing and slick 3-D user interfaces. Oxygen's researchers will have to tackle new designs for servers and storage arrays, and bring systematic organization to the Internet.

"Oxygen is not about an ultimate [end-user] device," says Anant Agarwal, an MIT professor of computer science and engineering. "It's about creating a coherent system for deploying these devices."

Just how that will be done, he acknowledges, remains to be seen. Oxygen nets could have devices with microprocessors and software stacks to support

multiple protocols. An alternative would be for Oxygen clients to run just one universal protocol to the servers, and for the servers to run several protocols as needed to interoperate. Or an Oxygen net, as the Web does today with HTTP, could have one protocol for the client devices to connect to servers which then communicate among themselves with different protocols.

Creating that coherent network will mean new computer and network designs, says Gary Herman, director of HP's Internet and mobile systems lab. Servers designed for online transaction processing workloads are not suited for the different workloads of the Web, he says.

Even client technologies, such as speech recognition, will have to be rethought for the kind of nets Oxygen requires. "Today, speech recognition is typically PC-based," Herman says. "How do you scale that for a hundred thousand users? How do you make speech recognition efficient?"

As the number of network nodes or computers and appliances surges, there's a significant increased cost in systems and network administration and deployment, says Hari Balakrishnan, an assistant pro-

fessor at LCS. Oxygen intends to create nodes that can automatically configure themselves with other nodes, without human intervention.

He also predicts network services will be much more highly distributed with Oxygen technologies, just as Web caching is becoming a distributed service spread over numerous servers.

Part of this trend will be increased intelligence in the network, requiring changes to the underlying TCP/IP protocol foundation. Oxygen is working with the Internet Engineering Task Force on some protocol proposals, Balakrishnan says.

Project Oxygen: [www.oxygen.lcs.mit.edu](http://www.oxygen.lcs.mit.edu)

[www.nwfusion.com](http://www.nwfusion.com)

## PUMPING UP OXYGEN

View LCS Director Michael Dertouzos' presentation about the Oxygen project and learn more about MIT's goals.

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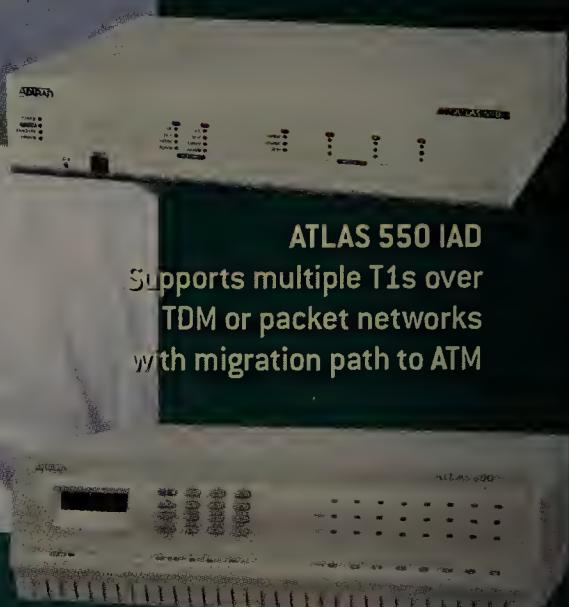
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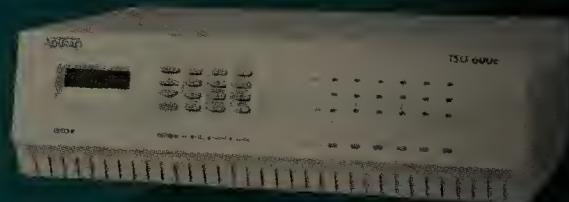
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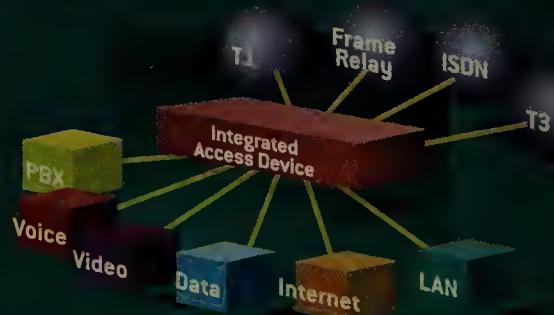
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# NQuire looks to provide more answers

BY JASON MESERVE

For customers wanting to supply end users with access to raw data without the hassle of installing complex analytical tools, nQuire may have an answer.

Users can pose questions in English to Version 2.0 of the nQuire Suite and receive relevant corporate data culled from a variety of back-end data sources. The software is intended for users who don't have the skills to work with more complicated online analytical processing tools.

nQuire looks at its technology as an "Ask Jeeves" for corporate data, says President and CEO Lawrence Barbetta. A user can enter a question such as, "What were sales in the eastern region for the first quarter?" and get the requested data in table format.

## What's new in nQuire Version 2.0:

- XML support
- Can now access legacy data in IMS, IDMS, VSAM and others
- Now runs on Windows 2000
- Single sign-on integration via LDAP
- Can scale to support a 4-processor machine

"The tool, in part, is meant for users who are not experts in the underpinning technology of databases and the like," says Bob Moran, vice president of research and managing director at Aberdeen Group in Boston. "[Users] have to be able to ask questions of the database in the language [they] use in everyday business. [They] don't want to have to think in Boolean algebra."

nQuire is server-based software that provides access to multiple back-end data sources, including relational databases, data warehouses, enterprise resource planning systems and external files. In Version 2.0, announced this week, nQuire is adding support for XML data sources and host-based data systems. The software runs on Windows NT and 2000 servers and comes with a variety of native drivers to access back-end sources. The Suite contains its own analytical engine for aggregating data and making calculations on the fly.

Moran says it's important for nQuire to support legacy systems because they are still a large part of many companies and are not going away any time soon. The addition of XML also provides access to newer data stores such as online marketplaces.

Query results can come in the form of tables created on the fly from any one of the connected data sources, Barbetta says. nQuire uses caching techniques

for some queries to help improve performance. "All the results are based on live data and not some batch report generated at midnight," Barbetta says.

Results are usually returned in table form via a browser, with links users can click on to drill down into their data to investigate further.

Pricing starts at \$125,000 to buy the nQuire Suite or \$8,000 per month for a subscription-based service.

nQuire Software: [www.nquire.com](http://www.nquire.com)

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(check ONE only)

01. <input type="checkbox"/> Manufacturing (other)	10. <input type="checkbox"/> Education	18. <input type="checkbox"/> Other (please specify) _____
02. <input type="checkbox"/> Finance/Banking	11. <input type="checkbox"/> Government/Military/Aerospace	
03. <input type="checkbox"/> Insurance/Real Estate/Legal	12. <input type="checkbox"/> Consulting (Independent) *	
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## 2. P: What is your primary job function? (check ONE only)

## S: What is your secondary job function? (check ALL that apply)

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<input type="checkbox"/> 2. <input type="checkbox"/> LAN Management	<input type="checkbox"/> 6. <input type="checkbox"/> Engineering Management	<input type="checkbox"/> 9. <input type="checkbox"/> Other (please specify) _____
<input type="checkbox"/> 3. <input type="checkbox"/> Datacom/Telecom Management	<input type="checkbox"/> 7. <input type="checkbox"/> Corporate Management (CEO, COO, CFO, Pres., VP, Dir., Mgr.)	
<input type="checkbox"/> 4. <input type="checkbox"/> CID/CTO/ISAT/MIS/ Systems Management		

3. What is the estimated value of Network equipment and services that you specify, recommend, or approve the purchase of?  
(Please print the appropriate number code on the line next to each product category. Please complete ALL categories A-O.)

1. \$100 Million or more	A <input type="checkbox"/> Large Systems (Mainframes/Minis)	H <input type="checkbox"/> Internetworking (including Routers, Switches)
2. \$50 Million to \$99.9 Million	B <input type="checkbox"/> Desktops (Micros/Laptops/ Workstations)	I <input type="checkbox"/> Internet/Web/E-commerce
3. \$25 Million to \$49.9 Million	C <input type="checkbox"/> Mobile (including PDAs, Wireless)	J <input type="checkbox"/> Intranet/Extranet
4. \$10 Million to \$24.9 Million	D <input type="checkbox"/> Servers	K <input type="checkbox"/> Remote Access
5. \$1 Million to \$9.9 Million	E <input type="checkbox"/> LANs	L <input type="checkbox"/> Peripherals
6. \$100,000 to \$99,999	F <input type="checkbox"/> WAN Equipment	M <input type="checkbox"/> Software
7. \$50,000 to \$99,999	G <input type="checkbox"/> Carrier Services	N <input type="checkbox"/> Services/Support
8. Under \$50,000		O <input type="checkbox"/> Storage
9. None of the above		

4. What is the total number of sites for which you have purchase influence?  
(check ONE only)1.  100+ 2.  50 to 99 3.  20 to 49 4.  10 to 19 5.  2 to 9 6.  1 7.  None

## 5. What is the total number of Servers/Clients/LANs installed/planned at your location/ in your entire organization? (check ONE box in each column)

At Location	SOURCES		CLIENTS		LANs			
	Entire Org.	B	Entire Org.	C	Entire Org.	E	Entire Org.	F
A	1. 50,000+		1. 50,000+		1. 50,000+			
	2. 10,000 to 49,999		2. 10,000 to 49,999		2. 10,000 to 49,999			
	3. 1,000 to 9,999		3. 1,000 to 9,999		3. 1,000 to 9,999			
	4. 100 to 999		4. 100 to 999		4. 100 to 999			
	5. 50 to 99		5. 50 to 99		5. 50 to 99			
	6. 10 to 49		6. 10 to 49		6. 10 to 49			
	7. 1 to 9		7. 1 to 9		7. 1 to 9			
	8. none		8. none		8. none			

## 6. What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check ONE only)	B. Involvement (check ALL that apply)
1. <input type="checkbox"/> Entire Enterprise/Multiple Enterprises	1. <input type="checkbox"/> Create Network/IT Strategy
2. <input type="checkbox"/> Division/Multiple Divisions	2. <input type="checkbox"/> Recommend/Specify Brand
3. <input type="checkbox"/> Department	3. <input type="checkbox"/> Approve Purchase
4. <input type="checkbox"/> None	4. <input type="checkbox"/> Evaluate Products/Services
	5. <input type="checkbox"/> Determine the Need
	6. <input type="checkbox"/> None

7. What is the estimated number of employees at your location/in entire organization?  
(check ONE in each section)

A. At your location:	B. Entire organization:
1. <input type="checkbox"/> Over 20,000	1. <input type="checkbox"/> Over 20,000
2. <input type="checkbox"/> 10,000 - 19,999	2. <input type="checkbox"/> 10,000 - 19,999
3. <input type="checkbox"/> 5,000 - 9,999	3. <input type="checkbox"/> 5,000 - 9,999
4. <input type="checkbox"/> 2,500 - 4,999	4. <input type="checkbox"/> 2,500 - 4,999
5. <input type="checkbox"/> 1,000 - 2,499	6. <input type="checkbox"/> 500 - 999
	7. <input type="checkbox"/> 499 or less
	8. <input type="checkbox"/> 250 - 499
	9. <input type="checkbox"/> 100 - 249
	10. <input type="checkbox"/> 50 or less

8.

Please indicate the Internet/Intranet/WAN/Remote products/services that you are currently involved in purchasing or plan to purchase (check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

INTERNET/INTRANET	
A	B
<input type="checkbox"/> 01. <input type="checkbox"/> VPN Equipment	<input type="checkbox"/> 07. <input type="checkbox"/> Web Hosting
<input type="checkbox"/> 02. <input type="checkbox"/> VPN Services	<input type="checkbox"/> 08. <input type="checkbox"/> Content Hosting
<input type="checkbox"/> 03. <input type="checkbox"/> Firewalls/Security/Encryption	<input type="checkbox"/> 09. <input type="checkbox"/> Traffic Management
<input type="checkbox"/> 04. <input type="checkbox"/> Electronic Commerce Tools	<input type="checkbox"/> 10. <input type="checkbox"/> Web Development Tools
<input type="checkbox"/> 05. <input type="checkbox"/> Web Servers/Software	<input type="checkbox"/> 11. <input type="checkbox"/> Management/Monitoring Software
<input type="checkbox"/> 06. <input type="checkbox"/> Internet Services	<input type="checkbox"/> 12. <input type="checkbox"/> Web Based Management Tools

LANs/INTERNETWORKING	
A	B
<input type="checkbox"/> 16. <input type="checkbox"/> Local-Area Networks	<input type="checkbox"/> 26. <input type="checkbox"/> Layer 4-7 Switches
<input type="checkbox"/> 17. <input type="checkbox"/> Network Operating System Software (NOS)	<input type="checkbox"/> 27. <input type="checkbox"/> ATM Switches
<input type="checkbox"/> 18. <input type="checkbox"/> Intel Based Servers	<input type="checkbox"/> 28. <input type="checkbox"/> Token-Ring Switches
<input type="checkbox"/> 19. <input type="checkbox"/> Intel Based Multiprocessor Servers	<input type="checkbox"/> 29. <input type="checkbox"/> Network Storage (NAS, SANS)
<input type="checkbox"/> 20. <input type="checkbox"/> RISC Based Servers	<input type="checkbox"/> 30. <input type="checkbox"/> Storage/Backup (Optical, Disk, Tape, RAID)
<input type="checkbox"/> 21. <input type="checkbox"/> Clustered Servers	<input type="checkbox"/> 31. <input type="checkbox"/> Network Test/Diagnostic Tools
<input type="checkbox"/> 22. <input type="checkbox"/> Print Servers	<input type="checkbox"/> 32. <input type="checkbox"/> UPS
<input type="checkbox"/> 23. <input type="checkbox"/> Routers	<input type="checkbox"/> 33. <input type="checkbox"/> Network Interface Cards (NICs, PCMCIA)
<input type="checkbox"/> 24. <input type="checkbox"/> Layer 2 Switches	
<input type="checkbox"/> 25. <input type="checkbox"/> Layer 3 Switches	

REMOTE/WIRELESS	
A	B
<input type="checkbox"/> 40. <input type="checkbox"/> PDAs	<input type="checkbox"/> 42. <input type="checkbox"/> Remote Access Services
<input type="checkbox"/> 41. <input type="checkbox"/> Remote Access Products	<input type="checkbox"/> 43. <input type="checkbox"/> Wireless Data Equipment/Services

WAN EQUIPMENT & SERVICES	
A	B
<input type="checkbox"/> 45. <input type="checkbox"/> Modems	<input type="checkbox"/> 51. <input type="checkbox"/> FT-1/T-1/T-3 Services
<input type="checkbox"/> 46. <input type="checkbox"/> Cable Modems	<input type="checkbox"/> 52. <input type="checkbox"/> xDSL Services/Products
<input type="checkbox"/> 47. <input type="checkbox"/> Asynchronous Transfer Mode (ATM)	<input type="checkbox"/> 53. <input type="checkbox"/> Diagnostic/Test Equipment
<input type="checkbox"/> 48. <input type="checkbox"/> Frame Relay Equipment including FRADS	<input type="checkbox"/> 54. <input type="checkbox"/> DSU/CSU
<input type="checkbox"/> 49. <input type="checkbox"/> Frame Relay Services	<input type="checkbox"/> 55. <input type="checkbox"/> PBXs
<input type="checkbox"/> 50. <input type="checkbox"/> ISDN Equipment/Services	<input type="checkbox"/> 56. <input type="checkbox"/> Voice/Video over IP Gateways

None of the above (1 - 60)  61. 

9.

Please indicate the Network hardware/software/services that you are currently involved in purchasing or plan to purchase (check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

SYSTEMS/PERIPHERALS	
A	B
<input type="checkbox"/> 01. <input type="checkbox"/> Laptops/Notebooks	<input type="checkbox"/> 05. <input type="checkbox"/> Storage/Backup (Optical, Disk, Tape, RAID)
<input type="checkbox"/> 02. <input type="checkbox"/> PCs	<input type="checkbox"/> 06. <input type="checkbox"/> Printers
<input type="checkbox"/> 03. <input type="checkbox"/> Windows Terminals/Thin Clients	<input type="checkbox"/> 07. <input type="checkbox"/> Printer/Fax/Copier Hybrids (Multifunction Printers)
<input type="checkbox"/> 04. <input type="checkbox"/> Workstations	

SOFTWARE/APPLICATIONS	
A	B
<input type="checkbox"/> 13. <input type="checkbox"/> Network Management (incl. SNMP)	<input type="checkbox"/> 20. <input type="checkbox"/> Groupware
<input type="checkbox"/> 14. <input type="checkbox"/> Systems Management	<input type="checkbox"/> 21. <input type="checkbox"/> E-Mail
<input type="checkbox"/> 15. <input type="checkbox"/> Security	<input type="checkbox"/> 22. <input type="checkbox"/> Enterprise Resource Planning (ERP)
<input type="checkbox"/> 16. <input type="checkbox"/> Directory Services	<input type="checkbox"/> 23. <input type="checkbox"/> EDI
<input type="checkbox"/> 17. <input type="checkbox"/> Operating Systems	<input type="checkbox"/> 24. <input type="checkbox"/> Desktop Videoconferencing
<input type="checkbox"/> 18. <input type="checkbox"/> Applications Development Tools	<input type="checkbox"/> 25. <input type="checkbox"/> Imaging
<input type="checkbox"/> 19. <input type="checkbox"/> Database Management/RDBMS	<input type="checkbox"/> 26. <input type="checkbox"/> Middleware/Serverware

SERVICES	
A	B
<input type="checkbox"/> 34. <input type="checkbox"/> BPO (Business Process Outsourcing incl. Financial Services, HR, Logistics, etc.)	<input type="checkbox"/> 35. <input type="checkbox"/> ASP Services
	<input type="checkbox"/> 36. <input type="checkbox"/> Call Center Outsourcing
	<input type="checkbox"/> 37. <input type="checkbox"/> Systems Integration/Consulting

None of the above (1 - 39)  40. 

10.

Please indicate the platforms that are currently installed/planned: (check ALL that apply)

A. Currently installed B. Planned for purchase

NETWORK PROTOCOLS	
A	B
<input type="checkbox"/> 01. <input type="checkbox"/> TCP/IP	<input type="checkbox"/> 05. <input type="checkbox"/> APPC/APPN/LU 6.2
<input type="checkbox"/> 02. <input type="checkbox"/> IPv6	<input type="checkbox"/> 06. <input type="checkbox"/> NETBIOS/NETBUEI
<input type="checkbox"/> 03. <input type="checkbox"/> SNA	<input type="checkbox"/> 07. <input type="checkbox"/> NFS
<input type="checkbox"/>	

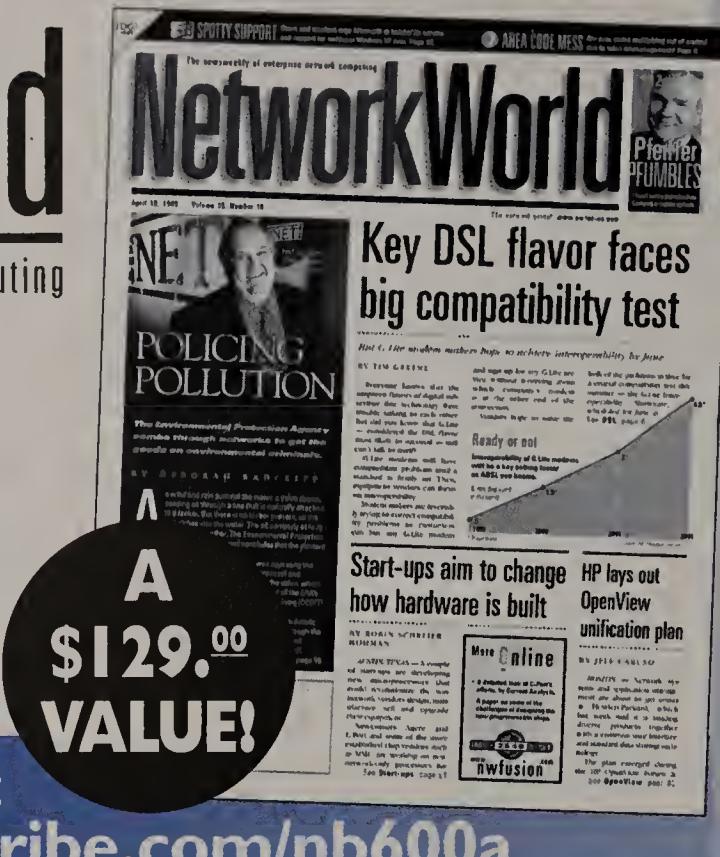
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# Infrastructure

**TCP/IP, LAN/WAN Switches, Routers, Hubs, Access Devices, Clients, Servers, Operating Systems, VPNs, Networked Storage**

## Briefs

Cisco will announce today several enhancements to its technical support Web site that should make it easier for network engineers to diagnose and troubleshoot network problems online, sparing the time and cost associated with phone calls to Cisco's Technical Assistance Center (TAC). Cisco's TAC Web site now offers a Compatibility Advisor, a Web-based interactive tool that lets network engineers plug in their current networking devices and determine whether they are compatible with equipment they plan to buy.

Cisco also beefed up its Output Interpreter, a diagnostic tool that prompts users to input information about the problems they are having on their networks, and lists possible solutions. The latest version of Output Interpreter supports frame relay and voice over IP. Since Cisco enhanced the site, monthly page views have increased from 350,000 last September to 1.8 million in May.

Cisco: [www.cisco.com](http://www.cisco.com)

NetWare developer Network Learning Masters has launched three network management utilities that make it easier for NetWare and GroupWise customers to perform repetitive administrative tasks. Dubbed EuMu, RUG and GW-Emailer, the utilities let network administrators group large numbers of users for import into NetWare or GroupWise and search the Novell Directory Services (NDS) database and make changes. EuMu is \$1,000 for one directory tree and 1,000 users. Additional directory trees are \$500; additional users are \$1 per user. RUG and GW-Emailer are included free with EuMu. Until the end of August, EuMu is available for \$.50 per user per directory tree.

Network Learning Masters: [www.nmasters.com](http://www.nmasters.com)

## Storage vendors tackle SAN issues

BY DENI CONNOR

**EDISON, N.J.** — A couple of the main questions asked at *Network World's* second series of Storage Town Meetings concerned the future of Fibre Channel and recommendations on how best to implement storage-area networks or network-attached storage.

At the meeting were Randy Chalfant of StorageTek, Eric Ottem of Gadzoox, Doug Swords of BMC Software, Don Cawthorne of Nortel, Bob Brodnitski of StorageNetworks, Troy Fournier of Hewlett-Packard and Dave Hill, an analyst with Aberdeen Group in Boston. *Network World's* Executive News Editor Doug Barney fielded the questions.

### What issues are impeding IT managers' ability to implement SANs?

**BMC:** We have a group of 10 corporate users called our SAN Council that perceives that the costs of implementing SANs is astronomical because it calls for



PHOTO © 2000 STEVEN BURNS

**StorageTek's Randy Chalfant says less-expensive bandwidth will accelerate SAN over IP.**

new technology and they don't know how to justify that. They also say the complexity of implementation is high. A third perception is the marketplace has not come to the point where you can connect any storage to any switch to any

server.

**Nortel:** A lot of what you are saying has to do with business continuity. Chief information officers are saying, 'I can't be offline for more than X hours or I'm going to be in trouble.' They have to build something into their infrastructure to avert that downtime.

**StorageTek:** A brokerage firm will suffer \$6.5 million per hour from downtime. A credit card operation \$2.6 million.

We used to think that 99.9% availability was good — that's a \$64 million a year outage for a brokerage firm. We need to get to five 9s of availability because those numbers become more affordable from an impact point of view.

Compatibility of parts is essential. You want to be able to take your equipment to a vendor's interoperability labs and test it. Then you compare it to the downtime numbers you can afford and cost-justify the SAN that way.

See SAN, page 32

## HP debuts NetServer for smaller companies

Company also to announce more services at PC Expo.

BY APRIL JACOBS

Hewlett-Packard this week will announce a server designed to give small to midsize businesses a box that's easy to set up and administer.

The NetServer E-800 is the first in a series of announcements the company plans to reveal at PC Expo this week. The announcements are expected to include new support services and security offerings aimed at small to midsize business customers. The company said the E-800 will include an integrated back-up offering, server management software and support services.

HP's entry will mean another choice for network professionals. Dell, IBM and Compaq have been targeting desktops and servers for midsize users for years. Observers say HP's move reflects the rapid growth in small and midsize businesses looking to handle growing amounts of Web transactions (see graphic).

We see a general slowdown in enter-

prise markets for servers right now," says Lindy Lesperance, an analyst with Technology Business Research in Hampton, N.H. "But the small to medium business market is becoming increasingly important."

HP has fitted the E-800 with specific features that are designed to keep networks running with as little administration as possible. The server also addresses other concerns, such as back-up and server configuration. For example:

- Users can use the E-800 with HP Navigator to guide setup and installation to get their systems running. HP Navigator guides users through operating system setup and peripherals such as printers and scanners.
- An integrated back-up package is available on certain models, including HP SureStore DAT24i and integrated back-up

### Transaction action

**U.S. small business spending for online transactions and purchases grew from \$2 billion in 1998 to \$25 billion in 1999. The number of small businesses conducting Web transactions rose from 1.8 million in 1998 to 2.8 million in 1999 — a 55% increase.**

SOURCE: ACCESS MARKETS INTERNATIONAL, NEW YORK

software with One Button Disaster Recovery.

- HP TopTools for Servers with a browser-based interface for easier server management and troubleshooting.

The HP NetServer E-800 system expands to two Intel Pentium III 733-MHz, 800-MHz or 866-MHz processors, 145G bytes of internal mass storage, up to 2G bytes of error checking and correction memory SDRAM, and seven available PCI I/O slots.

HP's Patrick Harr says the company will also include HP Instant Support starting in July, a free service that will help automate and speed the resolution of computing problems by providing a point of contact if a server goes down. The HP NetServer E-800 system will be available beginning July 1 for about \$2,060.

Hewlett-Packard: [www.hp.com](http://www.hp.com)

# LSI bolsters network-attached storage devices

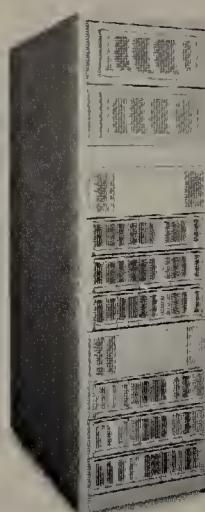
BY DENI CONNOR

**MILPITAS, CALIF.**—Storage vendor LSI Logic this week will launch a series of modular network-attached storage (NAS) devices designed for use in large enterprise networks that have storage demands ranging from 54G bytes to 17 terabytes of data.

Available in four models, the rack-mounted MetaStor N33XX and N43XX storage devices will have redundant and hot-pluggable components for fault tolerance and operate on Windows NT, Unix, Linux, AppleTalk, NetWare and HTTP networks. They will support

from 50 to 1,700 users and be expandable as a network grows. Each has a processor cache that is up to 8G bytes in size. The MetaStor N-Series products will replace LSI's E4400 storage system.

"Today we have about 750G bytes of data that will expand to about a terabyte," says Dave Dunlap, manager of production for printer Towery Publishing in Memphis, Tenn. "The modular architecture of the MetaStor is essential as we grow



LSI's MetaStor box is being boosted to handle 17 terabytes of data storage.

so we can add storage when we need it."

The new N3300 and 4300 have dual modules that communicate with the disk drives concurrently. Each communication module serves I/O requests and stands in for the other module in the event of a failure. The NAS appliances also feature duplicate array

controllers, drive modules, power supplies, fans and disk drives, and can support two UltraSPARC processors.

The N3350 and 4350 have the same security features, but each communications module can host up to four UltraSPARC processors running at 400 MHz, making them more powerful arrays, the company says.

All of the appliances use an embedded operating system and can be installed, managed and configured through a browser-based program called JetWorks Plus. This software provides server monitoring, manages all the file-sharing

protocols used and allows failover configuration.

They also support up to four 10/100M bit/sec Ethernet or FDDI network adapters for attachment to network segments and each can contain 18G-, 36G- or 73G-byte drives that operate at 10,000 rpm.

The N3300 and 4300 appliances are available now and start with 54G bytes of disk space. The N3350 and 4350 start at 180G bytes. The boxes support snapshot backups, which allow point-in-time copying, and start at \$150,000.

LSI Logic: [www.lsilogic.com](http://www.lsilogic.com)

**SAN,**  
continued from page 29

## How do Fibre Channel and storage over IP play in SANs going forward?

**Gadzoox:** I see an implementation that Fibre Channel-based SAN islands on the periphery are bridged with less-expensive IP routers in the middle.

**StorageTek:** We've been putting all kinds of things on networks with ATM for a long time. The technical capability to do that is not new. It's been around for 10 years or more.

How many people do you know with storage over IP today? Zip. Why is that? It's

about terabytes, suddenly the world changes from something it used to be to something very different. It's not the technical capability — it's the bandwidth.

**Aberdeen:** All of you use IP; only a quarter of you use Fibre Channel. And all of you would like to use IP. We are going to be talking about storage over IP for the next few years. There are half a dozen consortiums working on data over IP. The answer is that there are still technical issues that have to be addressed. It's interesting to note that what you will decide to use will depend on where you are today. If you have a SAN, you'll want Fibre Channel; if not, you'll want storage over IP. The practical matter is for the next couple of years, the solution is not going to be storage over IP.

## What is going to accelerate SAN over IP?

**StorageTek:** Cheap bandwidth.

**Nortel:** A whole other story. Now you are looking at voice tariff fiber — you're being charged a tariff for voice whenever you use fiber. That paradigm is shifting. Data tariff fiber is becoming available.

Some companies are putting fiber in faster than you can imagine; that is going to give you relatively inexpensive fiber compared to what you're familiar with.

With all the controversy over

## SAN over IP, is Fibre Channel dead?

**Aberdeen:** It's like the story of Mark Twain who visited Europe and during his visit, one of the newspapers reported his death. When he returned to the United States, he said, "Reports of my death have been greatly exaggerated." The same thing is true of Fibre Channel. It will be here to stay for quite a while.

**Gadzoox:** Six months ago people said that InfiniBand would displace Fibre Channel. Six months from now it might be another technology. Fibre Channel is shipping and solving problems today.

**StorageTek:** Fibre Channel is one of those things people already understand. Your applications work with it because they work with SCSI. The migration path for them is better. With fiber-optic, you can get 10 clicks without a repeater. When you look at high-speed copper for Ethernet, you are still going to be bound to some pretty short distances.

**BMC Software:** It is less a question of whether Fibre Channel is going to survive than a question of what types of content will require Fibre Channel. Streaming video is one. Our customers require low latency. Ethernet assumes that your message isn't going



According to Nortel's Don Cawthorne, fiber installations will accelerate SAN over IP.

to get to the destination successfully. Fibre Channel assumes it is.

With SANs and their dedicated channels, there is no traffic contention like there is in Ethernet. It also depends on the classes of service you need. Fibre Channel has three classes that allow a dedicated point-to-point that will guarantee delivery of data to a very loose organization that requires recoverability if the packet doesn't show up.

**Aberdeen:** IP and XML are going to dominate the marketplace in the future. The Internet is going to open up with more visual data and MP3. Vendors are going to solve the quality-of-service issues with IP. Once you start, you have to make sure you have very reliable delivery. You can't have slippage in a video;

data is the same way.

The question is 'Will IP dominate?' The answer is yes. From a practical point, all the issues you raise are valid in the next two to five years. At some point, all those other questions are going to have to be erased because everyone is going to want to communicate through one set of networks.

It appears from an informal poll of the audience that 33% of you are currently looking at a SAN, 10% are implementing a SAN, 7% are planning one, 10% have completed a SAN and 40% of you aren't doing anything. How does this jibe with the industry numbers?

**StorageTek:** Smith Barney says 35% of all those polled are currently evaluating SANs, 30% are implementing them, 8% have put in a SAN and 44% haven't done anything. We are targeting our education to that piece of the pie. □

PHOTO © 2000 STEVEN BURNS



IP and XML will dominate the storage arena in the future, says Aberdeen's Dave Hill.

because bandwidth winds up being the debilitating factor. The type of bandwidth on the Web is huge. Last November, British Telecom moved a terabyte of data over IP in 11 minutes with dense wave division multiplexing. When you talk

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# CacheFlow spearheads e-commerce consortium

Vendors, including HP, F5, Foundry, Akamai, McAfee, Alteon and Extreme, provide end-to-end services for e-commerce, B2B.

BY APRIL JACOBS

CacheFlow is building a consortium of vendors, application service providers and system integrators with an eye toward giving enterprise users a one-stop shop for end-to-end Web and e-commerce hardware, software and services.

CacheFlow has dubbed its team effort the Adaptive Content Exchange (ACE). ACE includes vendors such as Akamai, Alteon, Apogee, Aventail, Cidera, Concept Five, Extreme, Foundry, F5, Hewlett-Packard, Netigy, Secure Computing and Websense. Through ACE, the vendors provide content distribution, application, network and system hardware and software for Web and e-commerce sites.

The partnership will let network managers take advantage of a formal network of vendors and service providers to supply key pieces of their Web infrastructure instead of piecing it

together themselves. Through the alliance, network professionals could go to CacheFlow or any company within the alliance to set up their e-commerce or business-to-business sites. Those vendors will work together to provide everything from cache hardware and software to hosting, content distribution and system integration.

For example, Akamai and Cidera provide content distribution services, while F5 and Foundry provide load-balancing hardware and software. Alteon provides Web switches that route content to a device that provides the fastest response. Netigy and Concept Five provide systems integration services. Websense and Secure

Computing provide content filters that can prevent users from browsing unauthorized sites. McAfee is also providing real-time virus scanning to prevent virus-infected content from being distributed.

## A better Web experience

**Adaptive Content Exchange (ACE) will bolster content delivery by letting companies create sites that provide a better Web experience for users. ACE is built on CacheFlow's content engines and provides the following benefits:**

- Users' identities and geographic locations can be used by ACE to individually construct Web pages through a personalization application.
- Content can be converted to work with users' access devices, whether they be desktop PCs, wireless telephones or PDAs.
- ACE will dynamically route requests to network locations able to handle the load at that particular time.

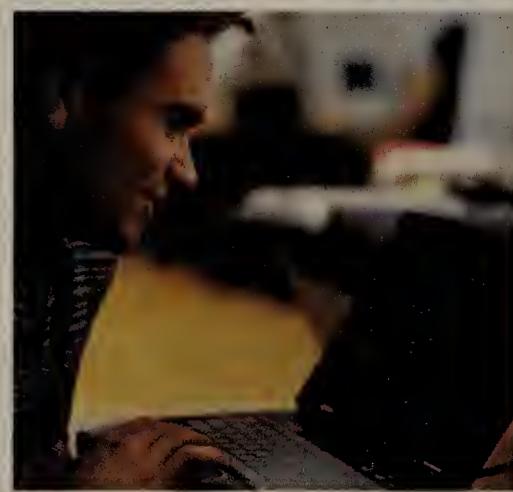
Apogee provides billing and accounting software.

Observers say the partnership will address some of the major stumbling blocks network professionals face in setting up Web, e-commerce and business-to-business sites — in other words, putting all the nitty-gritty pieces together.

"CacheFlow and other vendors out there know they don't have all the answers, so partnering with companies that provide the other pieces can

make putting a site together simpler," says Greg Howard, principal analyst at The HTRC Group, a consulting organization in San Andreas, Calif.

CacheFlow: [www.cacheflow.com](http://www.cacheflow.com)



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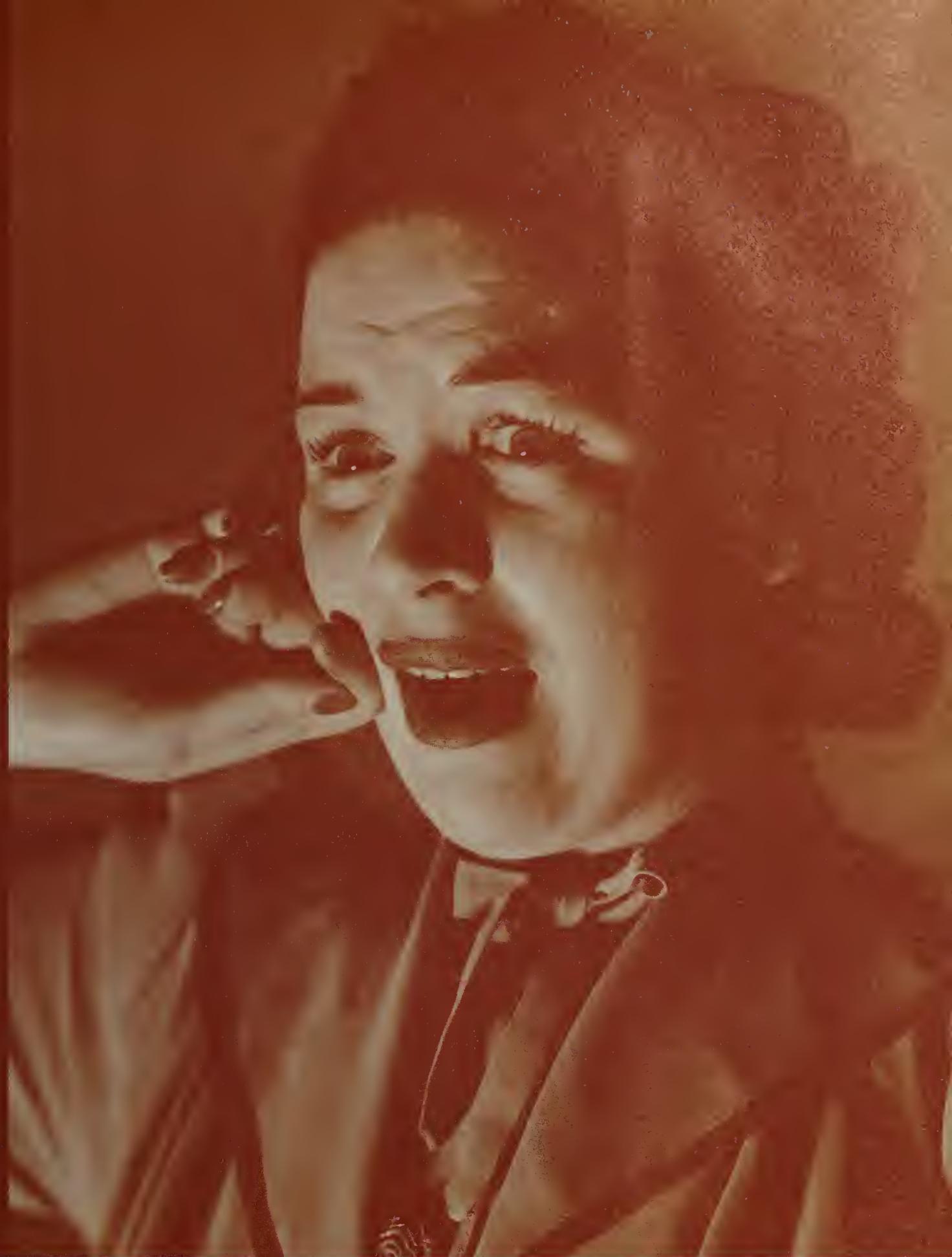
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Tolly on Technology . Kevin Tolly

### WE INTERRUPT THIS COLUMN...

**T**he column I intended to write today will have to wait. The time I'd allocated to write it just got gobbled up when, for no apparent reason, my

pristine Office 2000/Windows 98 notebook refused to perform the simple tasks this knowledge worker needed it to do. Because the company that put the

"bust" in robust has been on my mind a lot, I'll write about it instead.

Like most people, I'm a prisoner of Microsoft. And, like most, I spend an inordinate amount of (unplanned) time trying to coax my plain-vanilla, all-Microsoft system to perform the basic tasks essential to my craft.

I had plenty of time to ruminate as I waited for the Outlook inbox scan and repair utility to grind its way through my offline folders. It is then that I experienced an epiphany. It's not that the Redmondians write bad software so much as they write horribly unbalanced software. For as excessively feature-rich and ornate as their applications are, the underlying operating system and network components in particular are, by comparison, crude and unreliable.

Within an hour of powering up my new, preloaded Sony Vaio, Windows 98 greeted me with what I can only imagine was a "welcome" hang. (Don't tell me to switch to NT on my notebook — that was even more problematic!) I suppose it is a good idea that Bill's engineers get you used to hanging right away. (Remember to press "save" every few seconds and you'll be OK.)

Being an experienced knowledge worker, I knew it was all over — time to restart. Ctrl+Alt+Del? No response. Power switch off. No response. Unplug AC? Nope. Being careful not to break any wires to the port replicator, CD-ROM, floppy drive and Ethernet connection, I picked up the PC with one hand while I disconnected the battery pack (which required two hands!). Then, I could reboot.

I was fuming mad. As I searched around for the Sony tech support number, I flipped through the troubleshooting guide. There, listed under the heading "My computer won't shut down," it calmly tells the customer: "Unplug the computer from the AC adapter and remove the battery pack." Instead of Sony engineers screaming at Microsoft to fix the hang problem, they simply make Bill's problem my problem. Of course, Sony is a prisoner, too. What are they going to do — offer OS/2? Even I'm not ready for Linux.

Microsoft really needs to spend some time on basic functions such as dial-up networking support and Exchange synchronization. I can count on my dial-up function to succeed about one in three times. What's different about the time it succeeds? Why nothing, of course. When it fails, do I discover why? Only if you consider a message that says "DUN server not responding" informative. The times when DUN succeeds, Exchange fails regularly. So, I end up baby-sitting my e-mail sync just to make sure that hours later I don't find the urgent message I wrote still sitting in my outbox.

So, talk your problems up. Upper management should be aware of the massive productivity hit that the organization takes because Microsoft doesn't have its priorities straight.

*Tolly is president of The Tolly Group, a strategic consulting and independent testing firm in Manasquan, N.J. He can be reached at ktolly@tolly.com or www.tolly.com*

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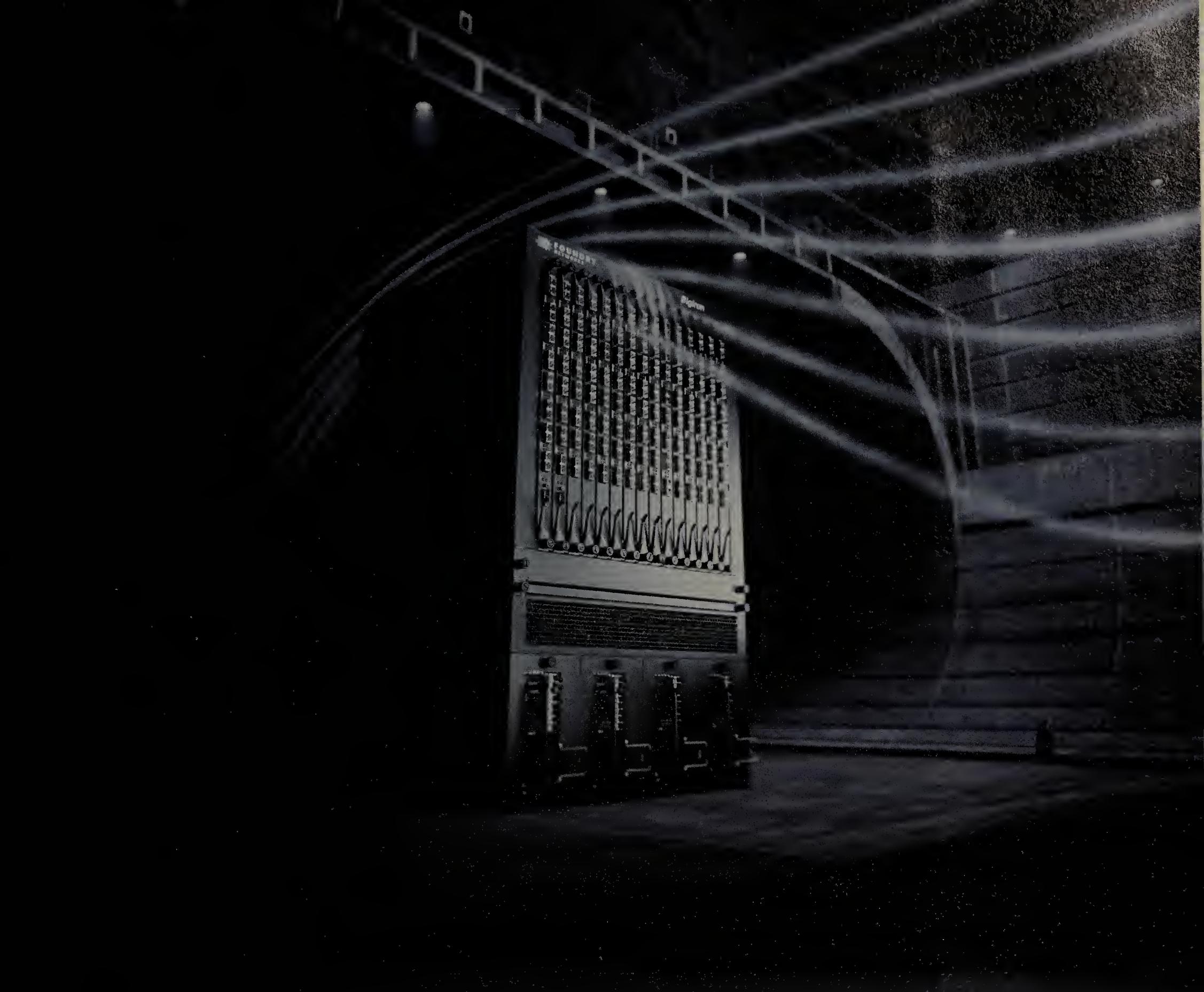
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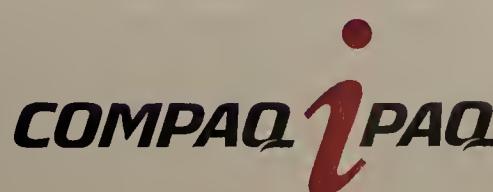
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# ARE YOU GETTING ALL YOU SHOULD FROM YOUR SERVER APPLICATIONS?



"Server certification was critical to making everything happen in Internet time."

—Kennet Westby,  
CIO of CornerDrugstore.com

JEFF REINKING/MERCURY PICTURES

USERS FIND THE BEST PERFORMERS  
ARE THOSE APPLICATIONS FINELY  
TUNED TO THE OPERATING SYSTEM.

# GET MORE FROM YOUR SERVER APPLICATIONS

The best performers are those fine-tuned to the underlying operating system

**W**

ouldn't it be a change for the better if things simply worked the way they're supposed to—the way they've been represented to work? Take server applications. Consider the business benefits your organization would reap if the applications loaded correctly from the get-go and then worked together without needing significant testing or other time-consuming work from your staff.

With applications tuned to optimize and exploit the underlying operating system, you'd also see a reduction in the cost of enterprise-computing ownership. You could dedicate fewer person-hours to tracking down and fixing server-related mishaps. Bet you wouldn't miss the hours—or days, sometimes—spent playing phone tag with users and vendors, either. Instead, you would use that time to develop new, mission-critical business applications.

And that's just the beginning. With Microsoft's® Certified for Windows® 2000 program, those

business benefits, and many more, are available right now. The stringent standards used in the certification program mean that all server applications that pass muster—those that bear the Certified for Microsoft Windows 2000 logo—will leverage the most important features of the Windows 2000 operating system to the greatest possible extent. Certified applications are designed from the bottom up to make your work life better by addressing key IT issues, such as ease of application deployment, lower total cost of ownership, and increased application reliability.

**A VALIDATION OF QUALITY**  
Microsoft's Certified for Windows 2000 applications are designed to take advantage of all the enterprise-focused features of the underlying Windows 2000 operating system: Active Directory, a key element in helping to reduce administrative costs; standard install/uninstall procedures; user interface settings; and Security Services. Certified Advanced Server applications must also support clustering—in other words, those applications must be able to fail over and restart on a second server without disconnecting their clients. And server applications with client components

must meet the requirements in the desktop Windows 2000 specification as well as the server specification. (For more information about the specification itself, read "Testing, Testing," a list of FAQs, on page 12.)

Certification is a "validation of quality," says Rob Enderle, vice president of desktop and mobile technology at Giga Information Group, Inc. in Santa Clara, Calif. "It provides a higher comfort level for customers and can give peace of mind."

GartnerGroup, of Stamford, Conn., agrees. In a research note, analysts Michael Silver and Michael Gartenberg wrote, "In creating a strong logo requirement, Microsoft has made the logo valuable to enterprises, which will be able to use the logo as a condition for an application's use in the enterprise." And in the April 17, 2000 issue, *InformationWeek*'s Aaron Ricadela said the certification requirements assure "IT departments that compliant software takes advantage of [Windows 2000's] remote software installation and system file protection features."

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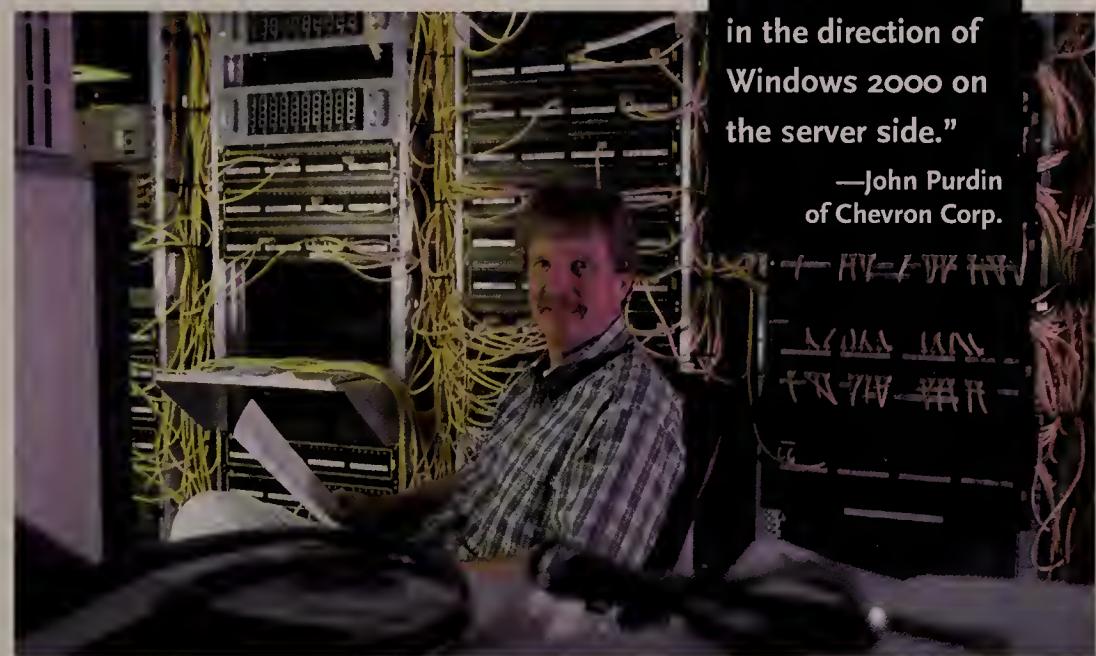
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CRAIG H. HARTLEY/MERCURY PICTURES

**"We want to move in the direction of Windows 2000 on the server side."**

—John Purdin  
of Chevron Corp.

### KUDOS FROM CUSTOMERS

Customers ranging from established players to emerging dot-coms have already found significant business value in the Certified for Windows program.

"The specification makes it more predictable when we do business with vendors," says Darren Marelia, technical director of NT architecture and planning at Charles Schwab & Co. in San Francisco. "A lot of effort goes into making applications work with our environment—where they put files, what kind of security to expect when they run, how they interact with the desktop. If we buy a piece of software that doesn't adhere to the spec, we have to go through it and bring it into our environment and up to our standards. The specification means we have to do a lot less work when we bring in an application."

Kennet Westby, CIO of CornerDrugstore.com, has also seen big benefits from certification. CornerDrugstore.com, based in New York, is uniting independent pharmacies across the United States, helping them build their own Web pages with customized inventory and customer support. "Family pharmacists that have earned the respect and trust of

their local communities will now be able to service their neighborhoods over the Internet," Westby explains.

CornerDrugstore.com essentially bases its business on Pivotal Corp.'s eBusiness suite running on Windows 2000. Pivotal's eBusiness helps automate all facets of marketing, sales, and customer service relationships among partners, employees, and customers.

CornerDrugstore.com deployed Windows 2000 early last year, and went live with eBusiness in May. "Server certification was critical to making everything happen in Internet time," Westby says.

"Pivotal's willingness to certify that all their applications and services would run in the Windows 2000 environment helped us make that choice," Westby says. "We didn't have to worry about it working." Because Windows 2000 was so new when CornerDrugstore.com was deciding which platform to use, the only other choice would have been to go with a different operating system and then switch after the fact.

"We didn't want to have to do that," Westby says. "It's difficult enough to get up and running as a business; the last thing you want is

to have to change your platform after the fact. Because of server certification, we didn't need to—everything worked as promised."

He says he's "absolutely thrilled" with Pivotal and Microsoft—his technology partners. "We've developed a very

become subject-matter experts in the applications themselves. "If one of our departments goes out and buys software to do something, the IT group can administer it and be involved with data management without having to install the actual software," Hill explains.

**"It's difficult enough to get up and running as a business; the last thing you want is to have to change your platform after the fact. Because of server certification, we didn't need to – everything worked as promised."**

—CornerDrugstore.com's Kennet Westby

complex product in record time, and we're thrilled at the ability to offer this to our customers."

Schwab, CornerDrugstore.com, and many others have discovered the powerful business benefits of relying on server applications that are certified for Windows 2000. Paul Hill, senior programmer/analyst at the Massachusetts Institute of Technology in Cambridge, Mass. and someone who helped create the server specification, says simply that certified applications result in "software that actually works."

Certification is especially important on the server side, Hill says. "Being a nonprofit, we can't go out and hire hundreds of systems administrators to help run software that's poorly written. We need to distribute software to thousands of desktops without having to physically visit each of the desktops." Certified server applications allow MIT to maximize its IT resources. Because each of the applications really does work, Hill explains, the software can work with Active Directory to centrally configure information and then deliver it to end users' PCs.

Another huge benefit, Hill says, is the ability to administer certified applications without having to

"It allows for an appropriate division of labor."

Seattle Mariners LAN administrator David Curry agrees. "Server certification is important; we believe in it. Non-certified applications don't take full advantage of Windows 2000—and you do get warnings when you go to install those non-certified applications."

#### SPEED AND EFFICIENCY: PRICELESS ASSETS

Among the business advantages customers buying certified applications have found—in addition to faster time to market, fewer hours spent chasing problems, and an overall improvement in the quality of server applications—are the following:

- A shorter learning curve when implementing the new operating system. Since many IT shops are still developing skill sets to allow them to maximize Windows 2000, using certified applications is a way to focus on the other things you need to learn—not on the applications themselves.
- Better use of your IT budget. In these days of record personnel shortages, you can apply your human resources to the places they're most needed.

- A shorter amount of time needed to test applications. Good IT managers will still do some testing, even of certified applications. But they will be able to do it in hours, not days.
- An overall smoother deployment of Windows 2000 and associated applications, with fewer problems and the confidence that what you're paying for will actually work correctly.

At the heart of all these benefits is the Application Specification for Windows 2000, with desktop and server components. Rich Clay, program manager at Microsoft, explains why Microsoft helped create the standard and the new logo program. "The prime criticism of the old logo program was that it didn't provide a high enough standard or the correct testing to be meaningful to the business customer. Microsoft's goal for Windows 2000 was to develop a specification in conjunction with our customers that contained requirements that really reflected what they needed and could be reasonably met by developers. In the end, we had a much higher standard test that made sure the software met that standard."

#### DEVELOPERS AGREE

Judging by those who have been there, the application certification test suite is daunting, but achievable. Peter Wagner, chief executive officer of the Damgaard Group in Copenhagen, says, "We set up a special team for this," with some 400 tests involved in the process.

Tom Kemp, vice president of marketing at NetIQ Corp. in Santa Clara, Calif., calls Certified for Windows "the most comprehensive software certification program in the industry that we're aware of." He bases this on the number of checkpoints in the tests and the time it took in the testing lab to

# APPLICATION ON PATROL

**B**MC Software's participation in the certification process has resulted in "a better product for the customer," says Greg Todd, program manager for Windows 2000 solutions.

BMC's product is PATROL for Microsoft Windows 2000 Server, and it provides a huge amount of systems-management functionality. Still in beta, it is scheduled to ship by the end of June 2000. The product is part of the PATROL 2000 product line, a broader integrated solution that enables the rapid deployment of advanced service level management.

PATROL uniquely allows for auto-

mated diagnosis of the root

cause of failures and prediction of the impact of business change on the quality of service delivered.

PATROL is geared to provide high availability and performance of the server. If something goes wrong—a server goes down or is being utilized to its maximum

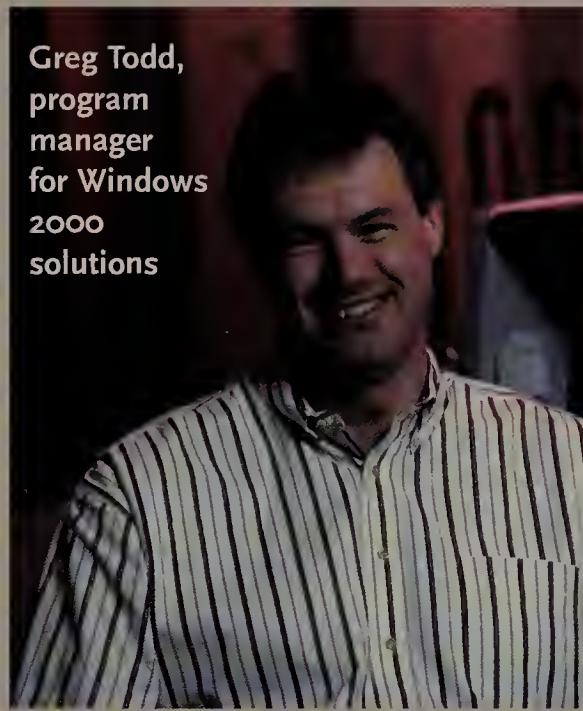
capacity—PATROL will alert the systems administrator via pager or console. But more than that, PATROL will take action to help correct the problem.

A lot of the new functionality in PATROL for Windows 2000 centers on Active Directory. PATROL delivers in-depth monitoring of Active Directory, a key part of the Windows 2000 architecture, ensuring that it's operating at optimum levels.

PATROL is, Todd says, "a well-behaved Windows 2000 application." This is, in large part, due to the certification process, he adds.

"When a customer installs PATROL, the files are laid down in the correct directory, there's standardization about how the start menus are placed, our agent is registered in Active Directory, and it follows the install/uninstall guideline," Todd explains. "Things aren't just lying around, causing problems later. The application won't be overwriting systems files and causing strange problems that nobody can find the cause of."

**BMC SOFTWARE** | With certification for Windows 2000 Server, BMC's PATROL product is more predictable and reliable.



CRAIG H. HARTLEY/MERCURY PICTURES

**Greg Todd,  
program  
manager  
for Windows  
2000  
solutions**

Todd believes the product is better—more predictable and reliable—because of the certification process. "The features are more in line with what Windows 2000 customers will expect," Todd explains. "A certified application like PATROL simply works better."

More information about PATROL can be found at [www.bmc.com/patrol](http://www.bmc.com/patrol). ▲



make sure everything was okay. But, he says, the time and effort it took to certify NetIQ's system management software was well spent. "It all leads back to happier customers," Kemp explains.

Mike Garcia, senior product manager at VERITAS Software Corp. in Mountain View, Calif., whose Backup Exec disk utility has passed through the certification process,

agrees that this program matters to enterprise customers. "We've gotten significant feedback from our customers that there's a distinct advantage when they know a product has earned the logo. They know they can buy and deploy with confidence, and that it will improve their chances of a successful rollout."

Ronj Uabhaibool, manager of worldwide networking services at

PeopleSoft Inc. in Pleasanton, Calif., is a Windows 2000 user and a huge certification fan. "Sure it's important—you want to make sure everything works well together, is reliable, and really leverages the new operating system. Otherwise, what's the point of going with Windows 2000—why not just stay with the old platform?"

Well stated. ▲

FileNET Corp. | Certifying Panagon Content Services Server for Windows 2000 gives customers confidence

# DOCUMENTATION MADE EASY

FileNET Corp. put its Panagon Content Services Server through the Windows 2000 certification paces "for our customers' sense of well-being," explains Matt Bogusz, program manager for content services. "We wanted to ensure that if our customers opt to move to Windows 2000, our application will go along with that, and they don't have to worry. It just makes it a whole lot easier for them."

The way Bogusz sees it, certification is a "step above" basic compatibility. "There's one level, where your product runs at least as well on Windows 2000 as it did before. But now the bar has been raised on features such as Active Directory, ease of use, and installability. Our product takes advantage of those new features."

Nick Tuson, director of product marketing at FileNET, says, "Many of our customers have a heavy investment in and deep reliance on Microsoft technologies. Therefore,

they want to feel confident that their applications will continue to support and work with newer versions of Microsoft technologies—they want to be sure

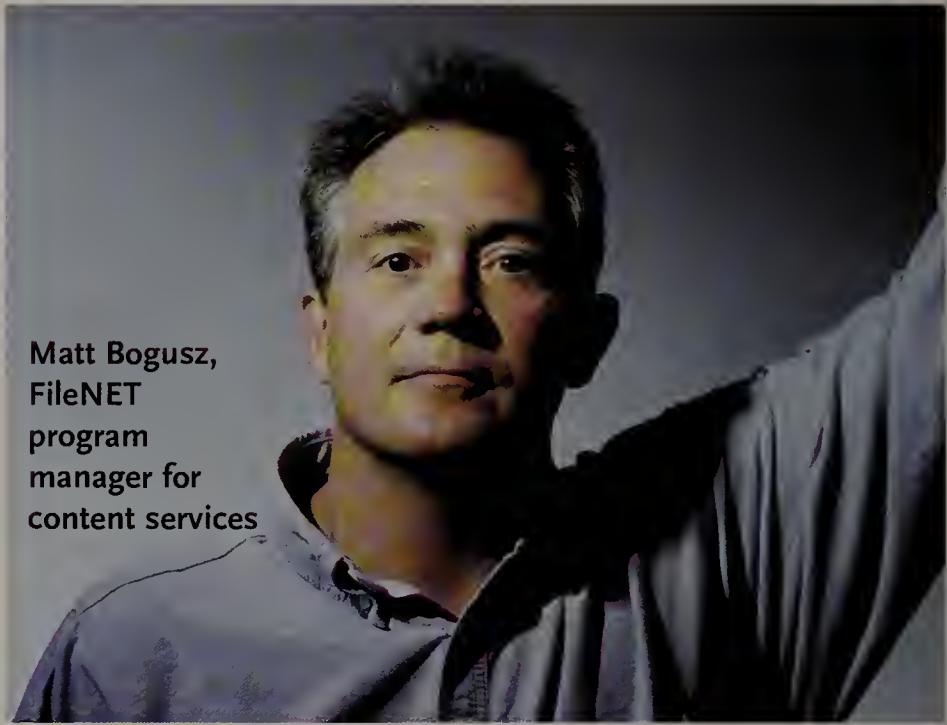
their applications will continue to run in the Windows 2000 environment and really take advantage of



FileNET

The Substance Behind eBusiness

**Matt Bogusz,  
FileNET  
program  
manager for  
content services**



all of Windows 2000's features and functions."

Going through the certification process gives customers "the confidence of moving forward and planning their new environments, knowing we will support that environment as well," Tuson adds. And it's also a definite advantage to FileNET. "Customers want to talk to the partners that understand the new platforms. Certification helps," he says.

Panagon Content Services Server allows users to easily access, view, and manage massive amounts of business information stored in scalable, networked document

libraries. It supports over 200 document formats, including images, video, and compound documents that consist of pages "linked" together. Panagon Content Services Server manages dynamic electronic documents throughout their life cycles—from collaborative creation to secure delivery, revision, and re-use. In fact, FileNET uses its own family of Panagon software to help manage its Web site ([www.filenet.com](http://www.filenet.com)).

**ENGINEERING DOCUMENTS TO  
MEET SAFETY REGULATIONS**  
Chevron Corp., the Houston-based petroleum giant, uses

Panagon software to help meet extensive government safety regulations. "There was a rule passed in 1992 that refers to plants and refineries that deal with flammable or hazardous chemicals," explains John Purdin, director of business development for Chevron's integrated document management solutions group. "You have to go through procedures to make operations available—you have to have engineering drawings, training that's up to date and documented," and a whole lot more, he says.

"We use Panagon to maintain the current released versions of our documentation as well as previous versions for retention purposes," Purdin says. These documents include material safety data sheets, engineering drawings, operating procedures, compliance audits, and many others. Some of Chevron's plants are using Panagon's Web-based services; others are not on the Web quite yet. But, Purdin says, "our direction is to move to all Web-based technologies."

They started testing Panagon 2000 in January, and have been impressed with its additional functionality. "We now have compound documents—word-processing documents with spreadsheets embedded in them—and we can create relationships between documents," Purdin says. "So we can relate a text document with an engineering drawing, and they're always linked."

Chevron is piloting Windows 2000 and will implement it in stages for both the desktop and the server over the next year or so. Purdin says he's looking forward to that. When Chevron adopts a new application, its current setup requires that Purdin's crew write scripts to install it. "That's a challenge," Purdin says, and he's look-

## Applications Certified for Windows 2000



<b>AAG Inc.</b>	Easy Web StoreFront
<b>Alibre, Inc.</b>	Alibre Design 1.0
<b>Art Info (Arti)</b>	Ideale 2000
<b>Attachmate Corp.</b>	Attachmate EXTRAI Enterprise KEAI X Enterprise 2000
<b>Attention System</b>	ATTN Enterprise Management
<b>AutoProf.com</b>	Profile Maker
<b>AVT Corp.</b>	Right Fax
<b>BMC Software Inc.</b>	PATROL for Win2000 Server v2.0
<b>BVRP Software</b>	PhoneTools
<b>Caere Corp.</b>	OmniPage Pro 1.0
<b>Ching Hang Information Co. Ltd.</b>	Super Consultant #7
<b>Cristal Software AG</b>	Safir
<b>Damgaard Group</b>	Axapta v.2.11
	Axapta 3.0
<b>Datasweep Inc.</b>	Advantage Suite
<b>Executive Software Int'l.</b>	Diskeeper Workstation 5.0
	Diskeeper 5.0 Server
	Undelete Server
	Undelete Server v.2.0
	Undelete Workstation
<b>Fabasoft AG</b>	Fabasoft Components
<b>FileNET Corp.</b>	Panagon Content Services Server
<b>Gemplus Software</b>	GemSAFE
<b>Guru Software</b>	GBA 2000
<b>Major Blue Company</b>	MBM—Major Blue Marketing
<b>Microsoft Corp.</b>	Office 2000 Suite
	Project 2000
<b>Motiva</b>	Motiva eChange Solutions
<b>Navision Software</b>	Navision Financials
<b>Net IQ Corp.</b>	NetIQ AppManager Suite v.3.5
	NetIQ AppManager Suite Advanced Server
	Operations Manager
<b>Palo Alto Software</b>	Business Plan Pro 4.0
<b>PentaWare, Inc.</b>	PentaZip
<b>Pivotal Corp.</b>	Pivotal eRelationship v.1
<b>Prophet 21, Inc.</b>	Prophet 21 Wholesale
<b>PTC (Parametric Technology Corp.)</b>	Pro/DESKTOP 2000
	Pro/DESKTOP 2000i2
	Pro/ENGINEER 2000i2
<b>Revit Technology Corp.</b>	Revit 1.0
<b>Scansoft, Inc.</b>	Paper Converter
	TextBridge Millennium Pro
	TextBridge Millennium Pro Business
<b>SolidWorks Corp.</b>	SolidWorks 2000
<b>Step Ahead Software</b>	Steps Business Solution
<b>Symantec Corp.</b>	PC Anywhere
<b>TIDAL Software</b>	sys*ADMIRAL
<b>TJ Group plc</b>	TJ Planner
<b>Trend Micro Inc.</b>	PC-cillin 2000 7.0
	VirusBuster 2000
<b>VERITAS Software Corp.</b>	VERITAS Backup Exec for Win Server
	VERITAS Backup Exec for Win Advanced Server
<b>Visma Business AB</b>	Visma Business
<b>WACOM Technology</b>	ECAD/dio
<b>Wellan Systems</b>	EOS Accounting System 1.0
<b>WRQ, Inc.</b>	Reflection for HP w NSVT
	Reflection for AS400
	Reflection for IBM
	Reflection for REGIS Groupics
	Reflection for UNIX and Digital
	Reflection X

ing forward to using Active Directory to simplify the process.

"As we develop new document management services, we want to move in the direction of Windows 2000 on the server side," Purdin says. "It's more stable."

As the internal liaison for the certification process, Bogusz says

that "VeriTest [independent test lab] was very accommodating. They work with you in real time to help you make fixes to meet the requirements. The requirements are stiffer than they had been in the past for earlier logo programs, but we look at that as an opportunity to improve our product." ▲

ISV

NetIQ | It took NetIQ more than a year to build the Windows 2000 version of its software. Going for Windows 2000 server certification meant getting the best return on its investment.

# Building the Best Product You Can

Operations Manager, from NetIQ (formerly Mission Critical Software), monitors servers and service levels in Windows NT and Windows 2000. Based on an extensible COM architecture, Operations Manager features include real-time security monitoring, customizable consoles to display multiple system viewpoints, and the ability to act on a multitude of events that may occur.

Merrill Lynch & Co. uses Operations Manager to help manage some 16 VPN servers worldwide, says Peter Kaufman, assistant vice president in Merrill's technology and infrastructure services group in New York. Kaufman oversees the firm's remote-access servers. He likes Operations Manager because "at a glance, from a Web console, you can look and see how all your servers are doing."

Kaufman appreciates how easy it is to generate reports in Operations Manager, and how it allows for automatic e-mail or paging in case of a problem. "Our help-desk people use it too," he says, "because it writes events to a built-in database."

He says his group is migrating to Windows 2000 for two major reasons: because it fixes a major bug they had with a previous operating system, and because it provides for more simultaneous sessions per server. Also, Windows 2000 "will give us a centralized way to manage remote access policies," Kaufman explains. "If different people or groups have access to different resources, or are allowed to connect for different times with different encryption, Windows 2000 will let us manage and control all that."

Kaufman's group is currently testing Windows 2000 on about a dozen different servers with Operations Manager.

They shouldn't find any problems, since Operations Manager was "built from the ground up" to leverage Windows 2000 and its many enterprise features, explains Olivier Thierry, vice president and product manager at NetIQ. So it was natural for them to go for Windows 2000 server certification.

The certification process helped the company "find stuff we didn't find in our testing," Thierry explains. There were some issues when deploying Operations Manager with Windows 2000 and Active Directory that had slipped through the cracks, he explains. "But when you bring in a third-party testing lab, you get another perspective—and these are things we're very glad we caught."

It took NetIQ over a year to build the Windows 2000 version of Operations Manager, with "completely new code," Thierry adds.

The result of the certification? "We have a better product," Thierry says. "It takes a serious amount of work and design and architecture to make your software a certified Windows 2000 application—it's not something you can add in after the fact." ▲

Olivier Thierry,  
vice president  
of NetIQ



CRAIG H. HARTLEY/MERCURY PICTURES

NAVISION | The company always sought Microsoft certification for its products, but the Windows 2000 process was especially rigorous and well worth it.

# A NATURAL EVOLUTION

If we hadn't gone for certification," says Jais Agertoft, product manager for Navision Software in Denmark, "our customers would have made us do it."

That point was brought home at a recent sales meeting, where product managers from around the globe came together. "Everyone really feels this [Windows 2000 server] certification is very important to us," Agertoft says. "It adds stability, so customers know the application won't crash their server. And that's important, especially in business applications. Our customers can't afford any down time—and that's why we wanted to make sure everything works perfectly on the Windows 2000 platform."

Agertoft's company makes Navision Financials—a software suite that offers customer resource management, e-business, and human resources as well as financials. Navision serves 39,000 customers in 89 countries. Most of those customers are running

Financials on Windows NT, but Agertoft figures it's only a matter of time before they move to Windows 2000.

As it turns out, Navision needed no pressure to make the move to certification. "Since our very first Windows application, which we released in 1995, we have always had Microsoft certification for our products," Agertoft says. "So it was a natural evolution for us to go for Windows 2000 Server certification too."

However, Agertoft calls this certification process "completely different" from the logo-program testing he'd seen for earlier operating systems. "The requirements are much stricter in all ways," he says, and points out that although the certification process was quite a bit of work, it was well worth it in the end.

**“Since our very first Windows application, which we released in 1995, we have always had Microsoft certification for our products.”**

—Jais Agertoft,  
product manager for  
Navision Software in Denmark

In the new version of Navision Financials that is certified for Windows 2000 Server, "we focused on the administrator role," Agertoft explains. "That person can now use Active Directory to administer all users, without having to have specific knowledge about Navision Financials." Because the application is so tied into Microsoft's server architecture, all administration—moving the user to another department, changing access rights, and so on—can be done through Active Directory.

There are a lot of benefits for the IT department with the Windows 2000 Server-certified version of Navision Financials, Agertoft says. "End users won't necessarily feel the difference, but the IT group will."

## SEEING THE DIFFERENCE

One person who has already seen the difference is Ralf Måansson, the IT manager of Elbolaget i Norden AB, the Swedish electricity utility. The Windows 2000 version of Navision Financials has made their customer service much easier.

"We can shut down a server to do maintenance on it, and the users won't even notice. And if we expand our business with new servers, we can just add them—no problem," Måansson says. "What's more, it's a secure system. The clustering feature in Windows 2000 means that even if some chips or a hard drive blow up, we won't go down. That helps me sleep better at night."

Also, Navision Financials has helped Elbolaget serve its customers in ways not possible before. Utility workers in the call center now have centralized access to information the customers need; no longer must they jump among different screens.

"In the old days, with mainframes and minicomputers, you needed a team of men in white suits to guarantee constant availability," Måansson says. "Windows 2000 has made it inexpensive and easy for us to guarantee that the call center is always available." ▲

For more information on the certification process, contact the Technical Account Manager nearest you.

PHILLIP SMITH  
phillip\_smith@veritest.com  
+61 (3) 9607 6310  
10th Floor  
150 Queen Street  
Melbourne, Victoria 3000  
Australia



ALEXIS EVRARD  
alexis\_evrard@lionbridge.com  
+33 (04) 92 95 20 59  
Europolis 1  
1240 route des Dolines  
06560 Sophia Antipolis  
France



LEN REHARD  
v-lenre@microsoft.com  
+49 (089) 3176 4543  
Microsoft GmbH  
Edisonstrasse 1  
85716 Unterschleissheim  
Germany



KAZUNARI YOSHIKAWA  
kazunari\_yoshikawa@lionbridge.com  
Ascii Network Technology  
Sasazuka-Center Bldg.  
2-1-6 Sasazuka Shibuya-ku,  
Tokyo 151-0073,  
Japan



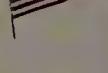
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U.K.



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v-gstoa@microsoft.com  
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Microsoft Corporation  
One Microsoft Way  
Building 20  
Redmond, WA 98052  
U.S.A.



MANDY CHAN  
Microsoft  
(310) 450-0062  
230 Third Avenue  
6th Floor  
Waltham, MA 02451  
U.S.A.



CRAIG BEAN  
craigb@veritest.com  
(310) 450-0062 x141  
3420 Ocean Park Boulevard  
Suite 2030  
Santa Monica, CA 90405  
U.S.A.



## EXECUTIVE SOFTWARE |

Certification is a way to raise the bar for software quality and software development.

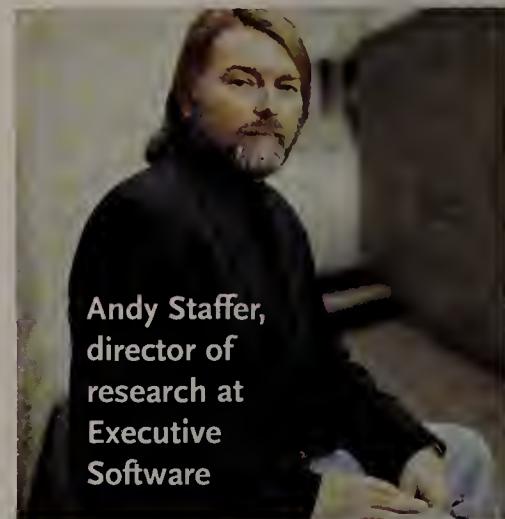
# THE CUSTOMER'S CHOICE

Now that Diskeeper, a disk defragmentation utility, has made the Microsoft Windows 2000 certification grade, "Our customers tell us that they use the Windows 2000 Server certification process as part of their selection criteria," explains Andy Staffer, director of research at Executive Software in Glendale, Calif., and the person responsible for the technology development of its products.

"It's a confidence factor," Staffer says. "Customers know this piece of software is doing what it should. When they deploy it on hundreds of servers, they'll know it works correctly."

That's what's motivating James Faircloth, director of information systems at C&M Medical Services, Inc. in Metairie, La. and a Diskeeper customer. "I want to move over to Windows 2000 on my servers, and I need something that understands Windows 2000 natively, without going through hoops," he says. For that reason, he will continue to use Diskeeper, as well as other Windows 2000 Server certified applications, as he transitions over.

Staffer characterizes the certification process as "very thorough." He notes that VeriTest was extremely supportive during the testing phases, helping Executive Software work out various kinks to ensure the product passed certification with flying colors. "The certification process raises the bar for software quality and software development. It just makes everything more robust."



Andy Staffer,  
director of  
research at  
Executive  
Software

Robustness and performance are crucial to Diskeeper, since its claim to fame is helping improve system performance. The software takes files that are fragmented—stored in pieces on a disk—and makes the files contiguous. This increases performance, because the system no longer has to search all over to get the file's information; it's all in one place.

Diskeeper customers can't seem to say enough about the software's benefits. Claus Martel, command IT manager for the U.S. Army Aviation and Missile Command in Redstone Arsenal, N.J., counts himself a Diskeeper enthusiast. "We're at a military installation with over 7,000 users, and I've recently recommended to our Commander that we make Diskeeper a necessary part of our IT department's protocol when they install Windows 2000. It's a tool as necessary as anything else I have—I can't live without it!"

That's the kind of comment that makes Andy Staffer believe that the efforts needed to make Diskeeper become Windows 2000 Server certified were all worthwhile. ▲

# BUT WAIT, THERE'S MORE!

THESE COMPANIES WERE AMONG THE  
FIRST TO HAVE THEIR APPLICATIONS  
CERTIFIED FOR WINDOWS 2000  
SERVER AND/OR WINDOWS 2000  
ADVANCED SERVER.

#### PIVOTAL CORP., Kirkland, Wash.

Its certified application is Pivotal eRelationship 2000, which automates all facets of marketing, sales, and customer service relationships among partners, employees, and customers. Pivotal calls its market "eBusiness relationship management"—it's a whole new class of business-to-business interaction on the Internet. Gord Breese, director of strategic alliances at Pivotal, says his company went through the certification process because "We knew it would dramatically improve our ability to serve our customers in the most demanding systems environment."

#### DAMGAARD INC., Atlanta, Georgia

Its certified application is Damgaard AXAPTA, a complete and flexible ERP system that includes its own development environment, called MorphX. AXAPTA includes all the functions a mid-sized company needs to run its business—financials, sales orders and purchase orders, logistics, production, and project management, among many other modules. AXAPTA remains the only ERP system certified for Windows 2000 Server. "As customers deploy, they'll be much more focused on certification," says Daniel Bebort, corporate product manager of technology at Damgaard. "And we'll be ready with manageability, scalability, and reliability. ERP systems that aren't certified will look kind of old and impractical."

#### VERITAS SOFTWARE CORP., Mountain View, Calif.

Its certified application is Backup Exec, a backup and restore facility for the entire Windows 2000 system, including Active Directory, COM+, Registry, system vol-

ume, and system files. The new Windows 2000 file system changes, including disk quotas and encrypted files, are also fully protected. Eugene Outler, engineering program manager for Backup Exec, says, "We've found in discussing things with customers that certification is most important in areas where customers have limited resources or are on a fast deployment track. We've heard that anything they can do to reduce the learning curve will help."

#### NETIQ CORP., Santa Clara, Calif.

Its product is NetIQ, a systems management solution that monitors the system performance, reliability, and availability of over 30 distributed Windows NT and Windows 2000 servers. NetIQ is certified on both Server and Advanced Server, meaning it supports cluster services for enhanced scalability and reliability. It also monitors Active Directory to track key statistics, including replication traffic and the growth of Active Directory data. Tom Kemp, vice president of marketing at NetIQ, says there are "a number of payoffs" to certification, the most important being continued customer satisfaction. "Customers will feel confident deploying our product in a Windows 2000 environment. It will be more reliable" than applications that aren't certified, Kemp says.

#### MOTIVA, San Diego, Calif.

Its certified application is Motiva eChange Solutions, a design change management product for manufacturing companies. The software allows manufacturers to manage and automate product change among business teams, supply chain partners, and customers. It helps with input, review, approval, and publication of design changes and advanced configuration management. eChange is also integrated with CAD solutions and with other core business systems, including ERP and customer relationship management. With more than 180 customers in the United States and Europe, Motiva eChange Solutions are at work in some of the largest manufacturing companies in the world, including 3M, ALCOA, British Telecom, Nissan, Pacific Gas and Electric, Pilkington Glass, and Shell Oil. ▲



## FAQ

TESTING,  
TESTING

**Q** *Why should I believe this isn't just marketing hype?*

**A** The certification program is based on a comprehensive specification developed by end users and others. The specification covers the core set of enterprise server features and functions in Windows 2000. VeriTest, an independent PC testing lab, administers the program. Applications earn the certification from VeriTest, not from Microsoft. GartnerGroup claims that using applications that conform to the certification specification will result in lower total cost of ownership. GartnerGroup even says it makes sense to follow the application specification for development of homegrown applications, too.

**Q** *So how does an application pass muster?*

**A** There are 700-plus pages on VeriTest's site that cover the specific tests run on the application seeking to be certified. In broad terms, the tests include: Windows 2000 fundamentals (32-bit support, core application stability, long file names, etc.); install/uninstall procedures (certifying that the application doesn't try to replace files that are protected by Windows File Protection and that it installs shared files in the correct locations, etc.); user interface fundamentals (certifying that the application supports standard sizes, colors, font settings, etc.); Active Directory (which checks how the application uses Active

Directory's objects and schema, etc.) and Security Services (which checks support of single sign-on required for certain types of applications). Advanced Server applications must also support Cluster Services (they must be able to install on two nodes and support failover, etc.).

**Q** *How did this specification come into being?*

**A** For more than two years, a team consisting of 10 major user organizations, several independent software vendors, and Microsoft worked to produce the Application Specification for Windows 2000. The purpose of this detailed specification is to ensure that the applications certified under its rigorous standards fulfill the promise of Windows 2000 for stability and performance. The specification is a roadmap for building highly reliable applications for Windows 2000, and certification is a guarantee that the application will fully exploit the benefits and new features of Windows 2000.

**Q** *What else is interesting about the certification program?*

**A** There are many resources that go into making this happen. Server application vendors pay to test their software—the amount varies depending on the kind of application being tested. There are nine full-time employees in Microsoft and partner labs, called Technical Account Managers, dedicated to helping developers pre-test their applications. They also give on-site presentations about certification.

Why "Certified for Windows" is a real specification and testing plan that you'll want to know about for your IT shop.

located to helping developers pre-test their applications. They also give on-site presentations about certification.

**Q** *How can I find test results on each certified application?*

**A** While the detailed results are confidential, VeriTest does post summary documents for each application. In these documents, end users will find important notes regarding support for the Application Specifications for Windows 2000. You can view these documents at [www.veritest.com/certified](http://www.veritest.com/certified).

**Q** *Where can I get more information?*

**A** There's a lot of information about the program available online. The certification home page on Microsoft's site is at <http://msdn.microsoft.com/certification/>. You can read the server and/or desktop Application Specifications for Windows 2000 by going to <http://msdn.microsoft.com/certification/download.asp>. Also check out VeriTest's site, at [www.veritest.com](http://www.veritest.com). ▲





# Carriers & ISPs

**The Internet, Extranets, Interexchange  
and Local Carriers, Wireless, Regulatory Affairs**

## Briefs

Sprint PCS President and Chief Operating Officer Andrew Sukawaty resigned recently to "pursue a new opportunity," the company announced. Sukawaty has agreed to consult over the next month with Sprint's Ronald LeMay, president and chief operating officer, who is temporarily taking over his position. Sukawaty joined Sprint PCS as its CEO in 1996 and was appointed president and CEO in 1998 when Sprint acquired control over its joint venture with TeleCommunications, Comcast and Cox Communications.

Nextlink Communications' \$2.54 billion merger with Concentric Network has been finalized. The two companies closed the deal last week just five months after Nextlink announced its intention to acquire the national ISP. Concentric will operate as a wholly owned subsidiary of Nextlink. The ISP has more than 100,000 customers, 37 point-of-presence sites and DSL services in more than 46 cities.

Nextlink: [www.nextlink.com](http://www.nextlink.com); Concentric: [www.concentric.com](http://www.concentric.com)

DSL carrier HarvardNet is opening in the New York City/New Jersey area, with plans to blanket the region with high-speed Internet access and VPN services. The company says it rents space for its DSL equipment in 235 Bell Atlantic switching offices in that region, and plans to push its BusinessSpeed DSL service as well as Web hosting, VPN service and data back-up service. By early next year, HarvardNet says it will expand its services to Philadelphia, Baltimore and Washington, D.C.

HarvardNet: [www.harvardnet.net](http://www.harvardnet.net)

## Dedicated T-3 prices drop dramatically

BY DENISE PAPPALARDO

Those customers looking for bargains on dedicated Internet access are most likely to find the best deals on the high end of the bandwidth spectrum.

In some cases, the cost of dedicated T-3 (45M bit/sec) Internet access services are down more than 25% over the past six months. Part of the price drop is attributed to ISPs deploying faster network gear that can support up to OC-192 speeds, says Steven Harris, an analyst with market research firm IDC in Framingham, Mass. Increased bandwidth demand is also a contributing factor, he says.

Lower prices will play a large part in customers' decisions to move to a T-3 line instead of adding more T-1 (1.544M bit/sec) lines.

"Not two years ago, dedicated T-3 connections were \$45,000 per month," says Jim Slabey, senior analyst at Giga Information Group, a Cambridge, Mass., consulting firm. Today, customers will pay at least \$10,000 per month less (see graphic).

UUNET currently has the highest monthly T-3 rate at \$35,000, but the ISP says it will introduce new rates next month.

In February, AT&T carved about one-

### The ISP playing field

Here's a sampling of how some of the biggest ISPs stack up on price. These monthly prices are based on one-year contracts with no discounts, making these the highest rates that the ISPs offer. Customers that sign two- or three-year contracts are often entitled to 10% to 15% off.

ISP	128K	1.544M	45M	Installation
AT&T WorldNet	\$895	\$1,850	\$26,000	\$1,000 to \$5,000
Cable & Wireless	\$570	\$1,235	\$29,450	\$300
Concentric Network	\$946*	\$1,395**	\$25,000	\$2,500
Genuity	\$450	\$1,000	\$30,000	\$1,995
PSINet	\$550	\$1,600	\$31,000	\$700
Sprint	\$860	\$1,420	\$27,000	\$1,000 to \$6,000
UUNET	\$995	\$1,795	\$35,000	\$3,000

\* Includes local loop charges.

\*\* Includes local loop charges if the customer is within a 50-mile radius of a Concentric SuperPOP.

third off of its T-3 offering, dropping from \$35,000 to \$26,000 per month. However, AT&T has the highest T-1 rate at \$1,850 per month. Like most ISPs, AT&T offers additional discounts for long-term deals — for example, 10% on two-year and 15% on three-year contracts.

The least expensive deal comes from Concentric Network. While other ISPs negotiate local loop port access for

customers, Concentric is the only ISP that includes local loop access fees with its standard T-1 dedicated service rates. Concentric's T-1 customers have to be within a 50-mile radius of one of its 37 SuperPOPs to get the local loop fees included in the base price of \$1,395 per month.

Concentric, like most other ISPs, also offers customers a fractional T-3 dedi-

See **T-3 prices**, page 42

## Covad hits bump as it moves into a retail market

*DSL vendor lowers sales projection for this year, sending stock into decline.*

BY TIM GREENE

SANTA CLARA — DSL carrier Covad Communications is reshaping itself into a retailer rather than a wholesale vendor of high-speed access services, but it's having trouble with the transition.

The shift could ultimately mean good things for businesses because they will have another DSL vendor with national reach to buy services from.

But first, Covad has to successfully make the transition, and that has so far proven to be rough going. Covad announced June 16 that it expects to sell fewer DSL lines this year than it had predicted earlier: 245,000 instead

of 300,000. That reassessment sent Covad's stock into a decline last week.

Part of the problem, says Covad's CEO Robert Knowling, is that ISPs that buy DSL wholesale from Covad now will be reluctant because Covad is a direct competitor in the retail market.

Covad, which started out just wholesaling broadband access to ISPs and other carriers, announced recently that it plans to buy BlueStar Communications, a Nashville vendor of DSL Internet access services to business customers in the Southeast. The \$148 million sale is pending. That deal gives Covad a direct sales force as well as a DSL infrastructure in smaller cities.

While the company might face some

rocky times, buying from Covad may actually be good for customers. When buying from Covad directly, customers are dealing with a business that owns its own network, except for the actual phone line between the customer site and Covad's access multiplexers. If a problem arises, customers can deal directly with Covad.

If customers buy from a retailer that wholesales services from Covad, the retailer takes the complaint and has to pass it on to Covad, which then has to chase down the problem. That adds an extra time-consuming layer between the customer and the company that can actually correct a problem.

Covad: [www.covad.com](http://www.covad.com)

T-3 prices,  
continued from page 41

cated Internet access service that gives users the option of signing up for more bandwidth, but not committing to a full T-3. Concentric is running a special on its FlexChannel T-3 service with discounts starting at 15% off list pricing, says Alan Bavosa, manager of enterprise access services at Concentric.

The promotional rate for FlexChannel T-3 service with 3M bit/sec is \$3,000 per month, for example.

Cable & Wireless and UUNET offer similar fractional T-3 services that cost \$4,465 and \$6,000 per month respectively. Cable & Wireless also offers a new NxT1 service that lets customers bundle multiple T-1 lines to increase bandwidth without switching to a T-3.

Even though T-3 prices are coming down, a full T-3 at 45M bit/sec may be overkill for some. If users expect their bandwidth needs to increase significantly over the next few years, choos-

**"In some regions there are problems getting T-3 lines regardless of what Qwest [Communications] and Level 3 say they've installed."**

Alan Bavosa, manager of enterprise access services, Concentric Network

ing a fractional T-3 service may make more sense.

Here are other factors to consider when considering the leap to T-3:

- Monthly port charges for T-1 local loop access typically average about \$200 per month, while T-3 local loop access averages about \$2,500 per month.
- T-3 services are initially more expensive than bundled T-1 services because the port charge is up to

\$2,000 more per month per line. But it's important to keep in mind that in the case of an NxT1 service customer who has seven T-1 lines, that customer will pay \$1,400 per month in local loop access port charges alone.

- Bundled T-1 services are better for companies that don't expect their bandwidth needs to exceed 10M bit/sec to 15M bit/sec in the next few years. The prime reason for this is most NxT1 services only let business users bundle seven to 10 T-1 connections, or 10.8M bit/sec to 15.4M bit/sec. If your company's needs will exceed 20M bit/sec in the next two to three years, you might be better off with a fractional T-3 service.

But not everyone will even have that option.

"In some regions there are problems getting T-3 lines regardless of what Qwest [Communications] and Level 3 say they've installed," Concentric's Bavosa says. As might be expected, smaller cities and rural areas face the biggest problems.

The cost of getting a T-1 or T-3 dedicated line installed varies greatly

between ISPs. For example, Cable & Wireless and PSINet charge \$300 and \$700 respectively to install a T-3, while AT&T and Sprint charge up to \$5,000 and \$6,000 respectively.

Giga's Slabey says many service providers actually use those fees as bargaining tools.

"ISPs throw installation charges out the window the same way car salesmen throw in the mats if they're worried you may walk away from the table," he says. □

[www.nwfusion.com](http://www.nwfusion.com)

## TALKING T-3s

Concentric, UUNET and AT&T have many offerings for customers seeking T-3s. Check out details of their services online.



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"problem-free and  
blazingly fast"



# Exabyte M2™ Tape Libraries



Eye on the carriers . David Rohde

## FCC SNIFFS MERGER, TURNS UP NOSE, EATS ANYWAY

You've probably heard that the Federal Communications Commission voted 5-0 to approve the merger between Bell Atlantic and GTE after the carriers agreed to the same type of good behavior that SBC promised when it bought Ameritech.

So were the commissioners delighted to vote in favor of the latest fusion of two giant telephone companies? Let's take a look at their statements:

Democrat Gloria Tristani: "With this merger, two companies, Bell Atlantic/GTE and SBC, will control a staggering 69% of the nation's access lines. . . . The combined [Bell Atlantic/GTE] will have the incentive and, absent conditions, the ability to deny, degrade or delay competitive local exchange carrier access to a large number of consumers."

Republican Michael Powell: "The

[commission] concludes that the merger will result in harms. . . . such as precluded competition, increased discrimination and loss of major incumbent local exchange carrier benchmarks."

Republican Harold Furchtgott-Roth: "I do not support those conditions that the commission imposed on the SBC/Ameritech transaction."

Well, folks, why on earth did you vote yes? The answer has much to say about why there are now only four major local exchange carriers left.

Each time two of these telcos get together in what appears to be a grossly anticompetitive merger, the FCC fumes about how the companies were supposed to enter each other's markets rather than combine.

But then they vote yes anyway because of a series of conditions that

commit the merged company to do "good things" such as bring broadband to poor neighborhoods, offer promotional discounts to competitive local exchange carriers, be nice to children and make their beds every morning.

The problem is that these conditions — usually written by the merging companies' lawyers — are cleverly worded to make them easy to comply with, without necessarily evening out real disparities in telecom access.

In Bell Atlantic/GTE's case, there was another factor: GTE had to sell its Internet backbone Genuity (formerly GTE Internetworking) because Bell Atlantic is generally not authorized as a long-distance carrier. But without Genuity, the combined company has no real connection to the Internet. That was too tempting for the Washington lawyers who saw another way to "craft

a solution." So they endlessly negotiated a formula for the merged company to supposedly spin off Genuity but keep in effect a below-cost stock option to get it back when Bell Atlantic's full long-distance authority comes through.

When the merger was proposed two years ago, why couldn't FCC Chairman Bill Kennard have looked Bell Atlantic CEO Ivan Seidenberg and GTE CEO Chuck Lee in the eye and said: "OK, guys, you want to merge? Then Chuck has to sell GTE Internetworking, period."

Then, if Lee complained he needed to keep some tie to the Internet, Kennard could have said: "Fine, then compete with Bell Atlantic instead of merging with it."

Being chairman of the FCC can't be that simple, can it? □

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# The brand-name carriers may not rule globally

BY DAVID ROHDE

**T**hanks largely to a 1998 World Trade Organization agreement on telecommunications that introduced competition into dozens of foreign markets, prices for international voice and data connections have started to drop dramatically. In some cases those prices are far below what they were just two years ago.

That trend makes it especially notable that two long-standing but not very high-profile international carriers have grown their revenues 81% and 50%, respectively, in the past year. These are not the hyped global ventures with names like Concert and Global One that attract attention more for their games of alliance musical chairs than for services.

Take a look at Infonet and Equant, two companies with decades of experience creating dedicated and dial-up connections with on-the-ground back-office and customer support, keyed off of long-established relationships with national carriers.

While AT&T, WorldCom and Sprint have struggled to find the right international partners, Infonet and Equant — both largely emphasizing ATM and frame relay connection, but also now pushing IP — have been responding enthusiastically to requests for proposal and winning lots of bids.

Last year, Infonet inked multinational deals with leading ad firm Saatchi & Saatchi, specialty packaging company Sealed Air, health care firm Allegan and Leading Hotels of the World, and others. Equant has long-standing deals with Xerox, Reuters and others.

The irony is both companies appear to have embarked on partnership deals of their own that may result in a challenge to the better-known, major-carrier alliances.

The first thing you see when you look at both carriers is a real global network instead of a lot of network-to-network interfaces between carriers that allied for strategic rather than engineering purposes.

Even at that, Infonet changed its basic network architecture about 12 to 18 months ago. The company used to run essentially a flat global network based on implementation of 150 to 200 Nortel Passport ATM switches, says Bob DaGiau, Infonet's vice president of global intranet services marketing. Then it introduced a core switching layer, currently based on Marconi (formerly FORE Systems) ATM switches, while retaining user-to-network interface ports on the Passport switches, which also support frame relay.

If Infonet decides to move to a global SONET or wave-division multiplexing core, it could do so without affecting its access layer, DaGiau says. Even though Infonet has its own switching architecture worldwide, it tends to lease transport capacity from legacy or next-

## INTERNATIONAL CARRIERS

**Infonet, Equant soar in telecom bids, may be key in the next alliances.**

### International holdings are boosting company income

**Equant and Infonet are increasingly striding the international stage and hooking up with the big names of global telecom.**

#### Equant

October 1995: Equant formed to market SITA airline net to other industries.

June 1998: Majority of Equant shares sold in public stock offering.

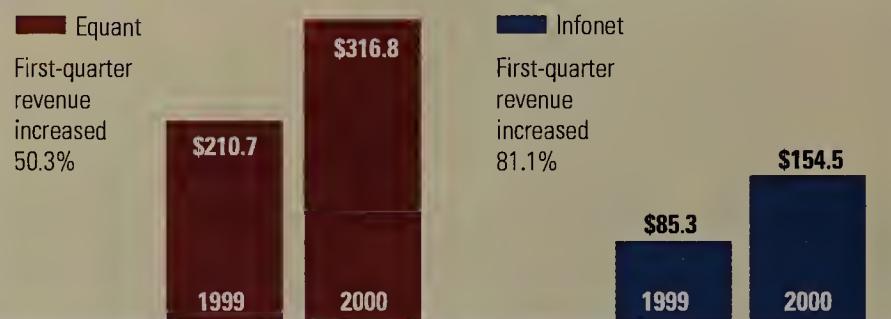
June 2000: France Telecom considers buying out SITA stock or Equant entirely.

#### Infonet

September 1999: Infonet appointed to manage network operators of European carrier AUCS.

January 2000: SBC Communications appointed to sell Infonet services in the U.S.

May 2000: Deutsche Telekom appointed to sell and brand Infonet services worldwide.



generation carriers wherever it can find the bandwidth. As bandwidth costs have dropped, Infonet has moved to buy fat pipes from whoever's digging them, although "there still are numerous spots around the world where lease is the only option," DaGiau says.

Perhaps Infonet's top priority is to build out a domestic U.S. network. That's one of the reasons for its recent alliance with megaregional Bell company SBC Communications, which gains the right to become a sales agent for Infonet services. In return, Infonet gets access to the nationwide broadband U.S. network of another SBC partner, Williams Communications. Infonet will concentrate its customer traffic from Williams switching locations back to a number of Infonet supernodes in the U.S.

Equant also has built its network in recent years with more than 1,000 Passports. Equant is the successor to a long-established airline network called SITA, which built its fame by installing an earlier Nortel X.25 platform called DPN-100 at more than 1,000 airports worldwide, and which Equant still maintains in its net.

Using that platform, Equant has emphasized con-

verged services recently, with its Integrated Voice and Data service introduced in 1998. It was one of the first genuinely converged services offering a choice of frame relay or ATM access.

Infonet has a different approach to convergence. Its current main voice-and-data service, called Global Multimedia Service, is akin to a managed frame relay access device program, although Infonet officials avoid labeling it voice over frame relay. Customer voice traffic is sent over a single frame relay access pipe, but

Infonet maintains four classes of service in its backbone network — three for data and one for voice. The intracompany voice traffic can be purchased for a fixed monthly cost, while traffic dumped off to the worldwide public telephone network is charged a traditional per-minute toll, DaGiau says.

In the works is a variation of the same idea employing frame relay-to-ATM interworking. The Infonet service, now called Global ATM, will be announced soon, DaGiau says. It will offer a range of access options from 9.6K bit/sec to 155M bit/sec, with the bandwidth options below 2M bit/sec carried over frame relay, and the options from 2M bit/sec and above on ATM.

Next up for both carriers is Multi-protocol Label Switching (MPLS), an emerging standard that has recently been employed by AT&T and WorldCom in their domestic U.S. networks for hybrid IP/ATM networks. Using Cisco routers at the edge of Infonet and Equant's networks, MPLS enables software in carrier switches to carve multiple intranets and extranets out of a user-to-network interface (which can be frame relay) from each customer site by attaching VPN tags to each user's traffic.

Equant hopes to announce an MPLS-based service in a few months, says Laurence Huntley, executive vice president of marketing. DaGiau says Infonet is also looking at an MPLS implementation within the year.

While Infonet has been allying with pure telecom partners, many of Equant's partnership initiatives involve vertical-industry customer partnerships with an eye toward industry extranets.

Still, Equant is looking at the possibility of hooking up with a brand-name carrier for marketing muscle — offering its far-flung switching network to carriers that have often boasted of global capability but lack a true global network of POP. For example, Global Crossing and France Telecom — now the sole owner of the former Sprint affiliate Global One — have recently talked to Equant about a possible purchase, according to sources.

Global Crossing broke off the talks after the asking price reached \$10 billion, according to published reports. But WorldCom is expected to make one of its next attempted acquisitions in the international arena, and Equant is likely to remain in play. □



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## Briefs

SmartLine has released Remote Task Manager 3.0, a tool for remotely managing applications, services, devices, processes and events on Windows NT and 2000. Remote Task Manager can be used to start, stop and add new services or devices and adjust security settings on remote machines. The software has an Event Viewer and Performance Monitor, which dynamically displays a remote system's CPU and memory usage. Remote Task Manager runs on Windows NT 4.0 or 2000. Pricing starts at \$25.

SmartLine: [www.protect-me.com](http://www.protect-me.com)

Critical Path this week will announce a suite of secure messaging services designed to help businesses protect information assets such as engineering drawings, financial documents and legal agreements transferred over the Internet.

The three new InScribe Secure File Services — all based on the Secure Sockets Layer standard — are:

- Web Courier, which lets users send secure messages via a Web browser. It costs \$15 per user, per month.

- Virtual Hard Drive, which lets users store documents in private or public folders on the Web and access them from a Web browser. It costs \$5 per user, per month.

- Team Workspace, which is a file sharing and collaboration service that offers document management, version control, access control and discussion groups. It costs \$20 per user, per month.

The InScribe services ride on top of Critical Path's Web mail, which costs \$5 per user, per month.

Critical Path: [www.cp.net](http://www.cp.net)

## Candle bolsters Web management tool

Upgraded e-Business Assurance software measures, monitors Web site response times.

BY CAROLYN DUFFY  
MARSAN

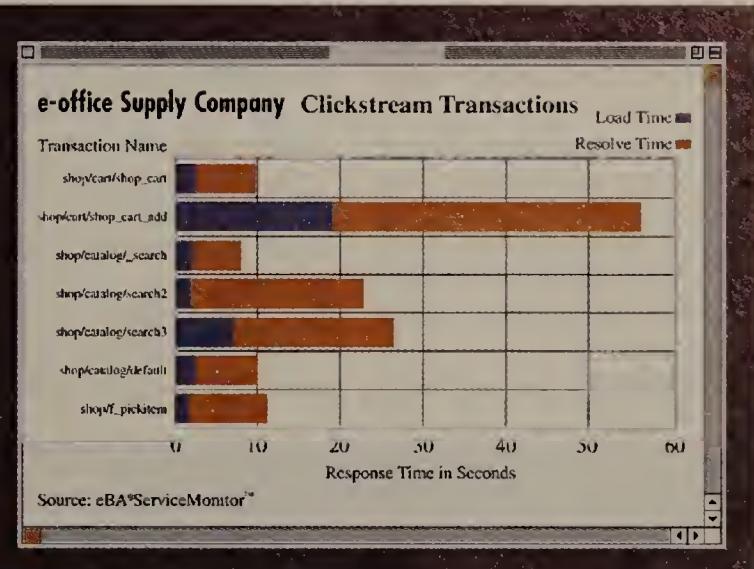
EL SEGUNDO, CALIF. — Candle this week will announce an enhanced version of its Web site performance monitoring tool that company officials claim is the first product of its kind to provide detailed information about Web site users while protecting their privacy.

Candle's e-Business Assurance (eBA) Service Monitor takes an unusual approach to measuring and monitoring Web site response time. Competing products use robots or network probes to simulate a user's experience on a Web site, but Candle's server software automatically loads a Java applet onto a user's system to record the user's experience. Candle also measures the user's navigational path and the amount of time spent on particular Web pages.

With Version 1.1 of eBA Service Monitor, Candle can monitor unique user sessions anonymously without using

### Real-world feedback

**Candle's eBA Service Monitor reports on the average load and resolve times that a user experiences for particular Web pages and transactions by loading a Java applet onto the user's system.**



cookies that track identities. Web publishers can tap Candle's updated monitoring tool to find out how long it takes a user to perform certain tasks, such as paying a bill or buying a stock, without knowing that user's identity.

"We have added some code into the product to be able to anonymously track people," says Karl Kotalik, senior director of e-business assurance solutions at Candle. "We can gather that very valuable user information, and at the same time we won't invade anyone's privacy."

Candle also added the ability to tag particular Web pages for monitoring prior to putting the pages into production — a feature that should save time for operators of complex e-commerce sites. Jean-Pierre Garbani, a senior industry analyst at Giga Information Group in Cambridge, Mass., says privacy protection is a nice feature to have but is not relevant to developers trying to maximize Web site performance.

"If I'm in charge of capacity management for a Web site, the fact that this data is anonymous doesn't bring me anything," Garbani says. "I'm interested in the numbers, not who or where they were generated." Garbani says end users will appreciate the privacy protection, and the new feature will likely reinforce Candle's position as the leader in Web site response time measurement.

Candle's eBA Service Monitor runs on Web server software from Microsoft, Apache and Netscape. Pricing starts at \$2,000 for a starter pack that measures 10 URLs on a Web server. Enterprise configurations cost \$100,000 and up. Candle also offers a hosted service that costs \$2,000 per month. Version 1.1 of the product and hosted service will be available June 30.

Candle's hosted service helped See **Candle**, page 51

## Parlez-vous Multicity?

Instant translation app lets Web sites incorporate multilingual chat.

BY IAN LAMONT

TYSON'S CORNER, VA. — Firms that want their Web sites to reach out to foreign users should take a look at Multicity.com, which last week launched services designed to help companies communicate with users in languages other than English.

"Right now, we're introducing the concept of instant translation, where in the same chat room you can have people that speak different languages, and you can be speaking in English and I can see it in French and someone else can see it in Italian," says Alain Hanash, CEO of Multicity.com. "All of a sudden, the lan-

See **Multicity**, page 48

[www.nwfusion.com](http://www.nwfusion.com)

### SPEAKING IN TONGUES

Want to have instant foreign language translation during your chat sessions with co-workers? Download Multicity.com's free tool.

**DocFinder 8724** online

# SmarterKids.com preps network for Christmas

Online educational toy store starts holiday shopping early for high-performance network.

BY ELLEN MESSMER

**NEEDHAM, MASS.** — Christmas in July? That's the way it is around online educational toy store SmarterKids.com, which is retooling its supply-chain management process and bulking its network to prepare for the holiday shopping season.

"For Christmas, you have to plan your merchandise mix now," says CEO David Blohm, who says the retailer has a base of 200,000 customers but probably won't be profitable until a year from now.

SmarterKids.com is rethink-

view order status.

Just this month, SmarterKids.com decided to run its own warehouse operations out of a Mansfield, Mass., facility.

"Our growth is such that we anticipate exceeding the capability in the J.L. Hammett warehouse," Blohm says, adding SmarterKids.com thinks it can cut up to 40% of fulfillment costs by doing them in-house.

To that end, SmarterKids.com purchased Logility's Warehouse Pro application and is integrating it into its DB2 database applications.

SmarterKids.com is also upgrading the Microsoft sys-

to Windows 2000.

While SmarterKids.com has fared pretty well with Microsoft server products, Secor says the software has come up short at times.

"Windows NT had some reliability problems that would require us to occasionally restart servers," Secor says.

SmarterKids.com has devised a Win 2000 migration plan based on testing done at nearby Microsoft labs. "We set up a complete test lab for load-testing the Windows 2000 software, duplicating what we now use at our Web site," Secor says.

The results show a 15% to 32% improvement with Win 2000 based on number of concurrent users compared with NT 4.0. Using the RSW Software e-Tester to simulate Web use, SmarterKids.com found Win 2000 was 15% faster serving Web pages and 32% faster in keyword searches done by 100 simultaneous users.

The testing showed that Win



**Christmas merchandise planning starts now, says CEO David Blohm.**

2000 did not require rebooting, although this was necessary several times with NT 4.0.

In other network changes to boost speed, SmarterKids.com is evaluating Intel's Secure Sockets Layer accelerator hardware to speed user order processing

**Multicity,**  
continued from page 47

guage barriers that exist on the Internet are going to be lowered."

According to Hanash, the new instant translation capability has been incorporated into Multicity.com's successful MultiChat product, which is already used in an estimated 60,000 chat rooms globally. The original MultiChat service had servers in 18 languages, which let Web sites have separate chat rooms for each language group, but no communication between the different sets of users. The new service, which relies on translation software designed by Systran Software in Soisy-sous-Montmorency, France, takes the chat application to a different level, Hanash says.

"The translation engine that we use does not do it word by word; it uses sentence-based translation, which is more powerful than just translating the words," Hanash says. "We're not claiming the translation is perfect. What we're saying is that

people who otherwise could never talk with one another can finally communicate."

Hanash says interest in the multilingual chat application has been strong. He names the United Nations Development Program as a client and says a large Internet firm in the Washington, D.C., area has asked Multicity.com to set up a system to let the company's English-speaking customer service representatives communicate with users in other countries. Hanash declined to name the firm.

Jon Wade, a Webmaster who uses the English-only version of MultiChat on the Red Hot Chili Peppers' site ([www.redhotchilipeppers.com](http://www.redhotchilipeppers.com)), says the new features will help the band reach out to international fans, whom Wade thinks are responsible for more than half of the band's album sales. "It would let people in South America communicate with people in English," he says. "[Otherwise] they probably wouldn't have that feature, they probably wouldn't be able to join that conversation."

Included in the chat application is a service that lets com-

panies e-mail their chat rooms to a select group of users for multilingual conversations on the fly. The service, called In The Box, creates a dynamically generated chat room in the body of an e-mail, which can be accessed from users' e-mail inboxes or a chat room already posted on a Web site.

Besides European languages, MultiChat will soon provide instant translation for Japanese and Korean. The application has three flavors: Basic, which is free thanks to banner advertisements but has only limited management features; Plus, which is partially ad-supported, costs \$84 per year for 10 simultaneous users and has advanced features such as chat-room transcription, password protection and moderated chats; and Pro, which is ad-free, costs \$300 per year for 25 simultaneous users and includes the advanced features of Plus as well as message boards for business Web sites. All versions come with In The Box and can be scaled for more users for an additional fee.

Multicity: [www.multicity.com](http://www.multicity.com)



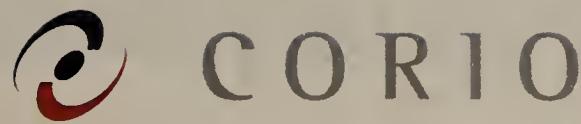
**SmarterKids.com CIO Rich Secor says upgrading the company's Microsoft systems will improve performance for increased demand.**

ing the fulfillment process to make sure items get from suppliers to online buyers, with returns handled, if needed.

Until now, the retailer has outsourced its item fulfillment to J.L. Hammett, a nearby school-supplies distributor. J.L. Hammett stores the goods and fulfills orders for SmarterKids.com, which has a private-line connection into the J.L. Hammett internal systems to

tems it uses for more direct interaction with customers, such as its Web server farm hosted by Exodus, says Rich Secor, the company's chief information officer. The retailer is seeking improved performance and reliability to handle increased customer demand.

The company, which uses Microsoft Site Server Commerce Edition, SQL Server and Windows NT 4.0, is migrating



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# Start-up targets electronic payments process

BY JOHN COX

PORLAND, MAINE — A Maine start-up is trying to unravel one of the

toughest knots in doing business over the Web — actually paying another company for goods and services.

Clareon has created a Web service

that fits between enterprise applications, such as accounts payable programs, and existing payment systems, such as the Automated Clearing House (ACH), which is widely used by banks to clear checks.

"Today, electronic commerce means the front process is electronic up to the moment when you push the 'buy' button," says Kate Barrand, chief marketing officer for Clareon. "Payments then go offline. Typically, you have a paper check going out the back end [of the payment process]."

The company, spun off by Fleet-Boston Financial and funded with \$15 million from various partners, is jockeying to be the middleman that makes fully electronic payments possible between

making a payment and the company receiving it.

Clareon will offer its payment service in two ways:

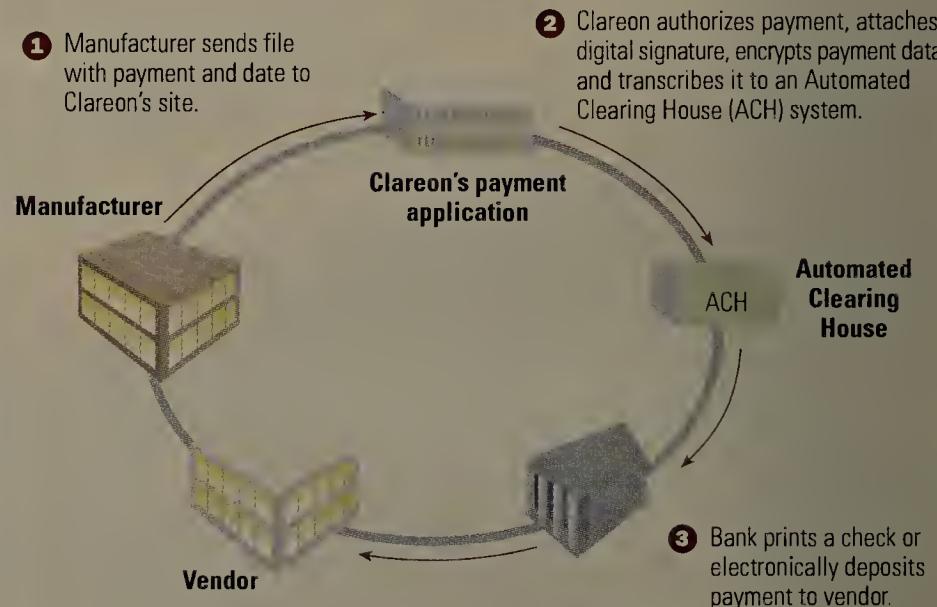
- The service will be available to a slew of new Internet business exchanges because they typically lack this fundamental capability.

- Clareon participants can also use the service to make and accept payments with each other directly, without using an exchange in the middle.

According to Barrand, industry studies put the cost of writing checks at \$1.50 to \$2 apiece. For businesses that write thousands of checks every month, those costs add up. Accepting paper checks and processing them adds still more costs.

## The missing e-comm link: Web payments

Clareon's payment application ensures the security of online cash flow, allowing Web companies to automate payments.



companies (see graphic). Its service is based on software technology originally developed by an industry group called the Financial Services Technology Consortium.

A company signs up for Clareon's service and downloads a small browser plug-in that digitally signs and encrypts file output from the company's accounts payable program. Via a Secure Sockets Layer connection, the files are passed to Clareon's server program for processing. The information is decrypted, then Clareon inserts a payment authorization and hands it to the ACH for final settlement by the banks, which debit one account and credit another to settle the transaction.

Finally, Clareon feeds relevant data, in the appropriate formats, back to enterprise applications, such as Oracle Financials or SAP R/3, of the company

Clareon charges companies receiving payments 50 cents per transaction, plus a monthly subscription fee of \$30. According to Barrand, both are below what companies must pay today for payment processing and bank services such as lock boxes.

Banks will take over some of these services, but only by creating one-on-one relationships with companies that are customers, Barrand says.

"But with us, you sign up once and can send and receive payments with anyone else in the Clareon network," she says.

Clareon made its first payments in mid-May, and is seeking new customers to register at its site. The company is bringing out a software upgrade July 15 with the full and final Web interface for its customers.

Clareon: [www.clareon.com](http://www.clareon.com)

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# IT Factory pushes for Microsoft-Lotus integration

BY JOHN FONTANA

CAMBRIDGE, MASS. — While Microsoft and Lotus battle it out for dominance in the messaging and collaboration world, IT executives would rather see the two work together on integration.

Because the possibility of that is remote, third-party application and development tool vendor IT Factory last week began delivering BowTie, a set of Microsoft-to-Lotus integration software components recently acquired from Dutch company Documentaal. IT Factory plans to make the components widely available in the U.S. for the first time.

BowTie enables bidirectional sharing of files and data between Lotus Domino and Microsoft Office applications. The software lets users store and access Office documents in Domino databases using its Windows interface. It also lets users view Office files with a Notes client, and lets Domino applications incorporate Office data.

Typically, integration of this type was done with clumsy OLE technology from Microsoft.

BowTie lets Domino store Office documents in their native format, which is important when they are used as file attachments to Domino forms. That means users no longer have to detach, edit and re-attach Office documents when changes are needed.

"If you have Domino as your back end and you are looking to develop applications with Office as the front end, BowTie feels like a must have," says Mark Levitt, an analyst with market research firm IDC in Framingham, Mass. "Without it, you cripple a user's ability to access files from either environment."

Lotus plans to offer similar integration features later this year under the code name BlueJay. These extensions to Domino, however, are not bidirectional and basically create another set of client interfaces into Domino. Conversely, the BowTie software gives users the option of working from a Notes client or Office application to

view data stored in Domino regardless of file format.

Additionally, BlueJay only supports integration with Office 2000, while BowTie supports all versions of Office.

IT Factory plans to exploit some of BlueJay's features, especially the iNotes for Outlook client, which provides Notes replication features to Outlook.

## Neat as a BowTie

**IT Factory has released a component-based technology called BowTie, which it acquired from Dutch firm Documentaal, to ease the integration of Lotus Domino and Microsoft Office. The new software allows:**

- Office documents to be stored in native format within Domino.
- Files attached to Domino forms to be edited with Office applications.
- Native Domino data to be opened in Office.
- Integration components to be added into broader Domino applications.

"Collaboration is not limited to Lotus Domino," says David Shimberg, executive vice president of IT Factory. "We're taking the strengths of both platforms and allowing them to work together."

BowTie adds a "Lotus Notes" drop down menu to each Office application, which lets users send documents directly to Domino. It also lets users open multiple Notes documents simultaneously in Office and provides support for document versioning.

IT Factory plans to make BowTie available in four versions. ITF BowTie Architected lets BowTie components be used within IT Factory's component-based ITF Software Development Kit. A second version, ITF BowTie Professional, will ship as a set of APIs for connecting Microsoft and Lotus environments. Both are priced at \$3,900 for a 100-user license. ITF BowTie Lite

as our competition."

Rajewski says Candle's new feature for tracking how individual users navigate through a site would be useful, too. "Who's going where — that's going to be critical information," he says. "You only have so much space. If you have a link that nobody ever clicks on, you're wasting that space."

With revenue of \$380 million in 1999, Candle has more than 4,000 enterprise customers.

Candle: [www.candle.com](http://www.candle.com)

provides a set of Office-to-Domino connectors and is priced at \$39 per user. All three versions are available now.

A fourth version will ship in September and fully integrate BowTie into the IT Factory development tool set. Additionally, IT Factory's Business Suite, a collection of prebuilt applications, will incorporate BowTie features. Pricing has not been set.

IT Factory: [www.itfactory.com](http://www.itfactory.com)

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**Candle,**  
continued from page 47

online retailer jewelry.com determine that its customer response time was too slow compared to its competitors, says founder Paul Rajewski.

"We figured out very quickly that our images were too big or too far away," Rajewski says. So jewelry.com shrunk its images and hired Web caching vendor Digital Island to place them closer to Internet users. "Our average user times were around four seconds — the same

'Net Insider . Scott Bradner

## FURTHER CODIFYING SPAM

**O**n June 14, the U.S. House of Representatives' Commerce Committee approved a bill that furthers legalizes and somewhat restricts

spam e-mail. The bill is very much a mixed blessing, and a few small additions would make a big difference.

The bill, H.R. 3113 (<http://thomas.loc.gov/cgi-bin/query/z?c106:H.R.3113>), bears the grand title "Unsolicited Electronic Mail Act of 1999" and aims to "protect individuals, families and Internet service providers from unsolicited and unwanted electronic mail."

While the bill's ostensible purpose is to protect people from junk e-mail,

the biggest effect would unequivocally make such e-mail legal. The bill does not even give ISPs the right to ban this type of e-mail outright; it only gives them the right to demand compensation from a sender of unsolicited e-mail for the cost of delivering the mail. It is far from clear if an ISP could set a high value on its spam delivery services under this proposed law.

The task for anyone who actually would like to control unsolicited e-mail is that so far the U.S. courts have decided the free speech clause in the U.S. Constitution enables spammers to inundate our mailboxes with all sorts of textual and visual garbage. Thus, the bill limits itself to "unsolicited commercial electronic mail and unsolicited pandering electronic e-mail," but does not address unsolicited noncommercial e-mail. For example, someone could send a copy of the Unabomber's manifesto to his 10 million closest friends and this bill would provide no way to block that.

This bill may be about as good as we are going to get, but there are a few things missing.

Basically, the bill tells the Federal Communications Commission to maintain a list of people who do not want to get spam and tells people who send spam not to send any to people on the list. But the bill should target people who sell lists of e-mail addresses as well as those who use such lists.

It also should include some way that the operator of an e-mail list, such as the Internet Engineering Task Force's, can get the list name onto the FCC list.

The bill requires a "conspicuously displayed" e-mail address to ask to get off but should require that this address be the return address on the spam.

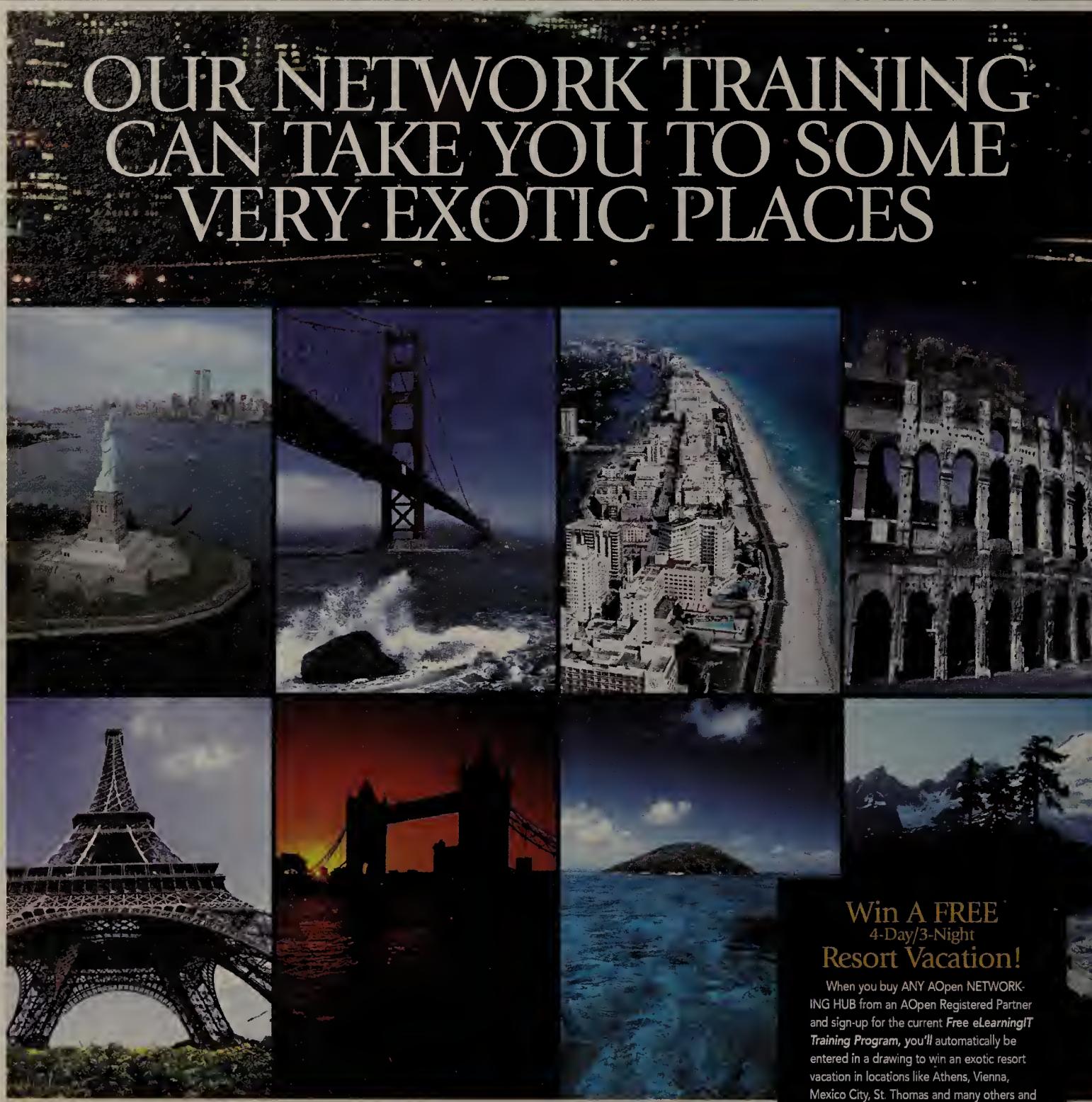
The bill also requires that notice be given to a spammer through "registered or certified mail" but does not require a working postal address in the spam — it should. The bill should permit ISPs to "just say no."

The bill should especially enable class action lawsuits against spammers. The way it is now, you can sue if you got e-mail after saying no, but who is going to bother for the \$500 to \$2,500 you might get?

We are doomed to be inundated with more spam, but a good law might help some.

Disclaimer: I'm sure Harvard Business and Law Schools have people profiting on all sides of this issue, but I did not ask them, and the above advice is my own.

*Bradner is a consultant with Harvard University's University Information Systems. He can be reached at [sob@sobco.com](mailto:sob@sobco.com)*



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# Technology Update

An Inside Look at the Technologies and Standards Shaping Your Network

## Ask Dr. Intranet

By Steve Blass

We're a group of students working on a Wireless Markup Language project. We're looking for a compiler that would convert HTML to WML.

Commercial HTML-to-WML translators and Wireless Application Protocol (WAP) gateways are available from Oracle, IBM, Spyglass, Proxinet, EveryPath and AvantGo. Most provide dynamic gateway services between wireless devices and the Web rather than converting static HTML documents to WML pages. Digital Paths provides a free online gateway service at [www.digitalpaths.net](http://www.digitalpaths.net) that automatically converts Web pages for delivery to WAP devices. It works if the Web site includes ALT tags for graphic-based links. Many sites come through as blind links denoted by asterisks, so your mileage will vary from site to site. Other online WAP gateway services, such as [www.go2online.com](http://www.go2online.com), provide dynamic Web page translation proxies. There is a pair of Java utilities available free from [www.compapp.dcu.ie/~bbresl.ca4/funcspec.html](http://www.compapp.dcu.ie/~bbresl.ca4/funcspec.html) that can be used to create a dynamic online HTML-to-WML gateway which shows the process of performing the language conversion.

General XML parsing and publishing tools are available through the Apache XML Project. Apache's Cocoon XML Publishing Framework software is located at <http://xml.apache.org/dist/cocoon/>. You can also find links to a range of WAP resources at [www.ccwap.com](http://www.ccwap.com).

Blass is a network architect with Sprint Paraben in Houston. He can be reached at [dr.intranet@paraben.com](mailto:dr.intranet@paraben.com)



## Get ready for 10-Gigabit Ethernet

BY BRUCE TOLLEY

10-Gigabit Ethernet is coming soon to a network near you, and it will change the way networks are built. While historically Ethernet has been used as an access technology, 10-Gigabit Ethernet promises to be the simplest, fastest and most cost-effective aggregation and backbone network technology.

This flavor of Ethernet uses the IEEE 802.3 Ethernet media access control (MAC) protocol, frame format and frame size. 10-Gigabit Ethernet is full duplex, just like full-duplex Fast Ethernet and Gigabit Ethernet, and thus has no inherent distance limitations.

Because 10-Gigabit Ethernet is still Ethernet, it minimizes the user's learning curve by maintaining the same management tools and architecture.

While some details are still being worked out with the IEEE's 10-Gigabit Ethernet Task Force, that group has achieved consensus on the scope and purpose of the standard, as well as on many of the technical details. In contrast to previous Ethernet standards, 10-Gigabit Ethernet is targeting three application spaces: LANs, WANs and metropolitan-area networks (MAN).

To address these applications, most of the task force's work involves defining appropriate physical layers (PHY). The PHY defines the electrical and optical signaling, line states, clocking guidelines, data encoding and circuitry needed for data transmission and reception. Contained within the PHY are several sublayers that perform these functions including the physical coding sublayer and optical transceiver or physical media dependent (PMD) sublayer for fiber media.

LAN applications include server interconnect for clusters of servers, aggregation of multiple Gigabit Ether-

net segments into 10-Gigabit Ethernet downlinks and switch-to-switch links for very high-speed connections between backbone or data center switches. The PMD sublayer transforms the incoming stream of changing voltages that represents the data into light pulses so that the data can be sent across fiber-optic media.

Various PMDs have been proposed for the campus and building backbone

es over dark fiber without SONET or ATM and provision high-speed 10/100/1000M bit/sec services at low costs.

The task force has defined an optional PHY that can interface with the existing WAN SONET infrastructure. The IEEE goal is to define a SONET-compatible PHY that will operate at a data rate compatible with the payload rate of OC-192c/SDH VC-4-64c. This SONET-compatible interface allows 10-Gigabit Ethernet switches and routers to attach to SONET access equipment and use the SONET infrastructure for Layer 1 transport.

While customers will see pre-standard 10-Gigabit Ethernet products later this year, the IEEE task force does not expect the standard to be completed until March 2002. A key milestone for the effort will be the creation of a first draft by September, which will be reviewed at the task force's meeting in November.

With 10-Gigabit Ethernet, network managers will be able to build LANs, MANs and WANs

using Ethernet as the end-to-end Layer 2 transport. In terms of physical media, 10-Gigabit Ethernet will support distances of 100 meters to 300 meters on multimode fiber and more than 40 kilometers on single-mode fiber. Long-distance reach on single-mode fiber enables network managers to build simple, low-cost metropolitan-sized networks with Layer 3 and Layer 4 switches and 10-Gigabit Ethernet backbones.

Tolley is a product manager at Cisco, vice president of the 10-Gigabit Ethernet Alliance, member of the Gigabit Ethernet Task Force and member of the Ethernet Working Group. He can be reached at [btolley@cisco.com](mailto:btolley@cisco.com)

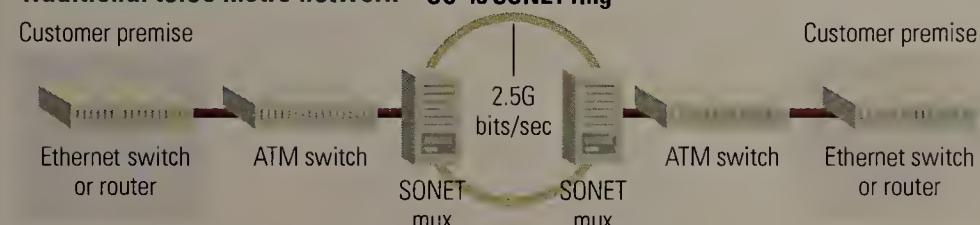
## UPCLOSE

### Advantages of 10-Gigabit Ethernet metro networks

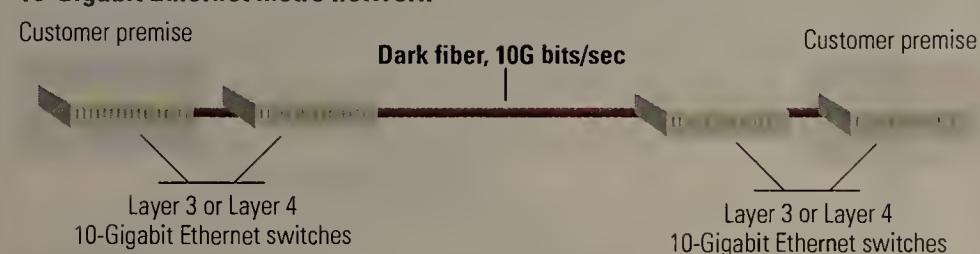
**Metro networks based on 10-Gigabit Ethernet let service providers reduce the cost and complexity of their networks while increasing backbone capacity to 10G bit/sec through the elimination of several network elements required to run TCP/IP and data traffic over an infrastructure originally designed to transport voice.**

**The reduction in the number of network elements and network layers lowers equipment and operational costs and simplifies the network architecture.**

#### Traditional telco metro network OC-48 SONET ring



#### 10-Gigabit Ethernet metro network



application, including a PMD based on wavelength division multiplexing that supports installed multimode fiber backbones by transmitting, muxing and demuxing upon reception of four optical wavelengths across one 62.5 micron multimode fiber pair up to 300 meters in length.

10-Gigabit Ethernet will also be used for MANs. Here the distance goal of the task force is to reach at least 40 kilometers over single-mode fiber, with the 1550 nanometer serial laser PMD proposal reaching up to 80 kilometers over existing single-mode fiber. With such 10-Gigabit Ethernet technology, service providers will be able to build simple Ethernet networks with Layer 3 and Layer 4 switch-

Gearhead — inside the network machine . Mark Gibbs

## PRIMED TO PRINT, UNIX STYLE

Last week we discussed the Line Printer Daemon Protocol (LPR), its relevant standards, and some of the ins and outs of Microsoft's implemen-

tation. This week, Gearhead will take a brief look at what printing looks like in the Unix world.

To a Windows user, Unix looks odd in

a lot of ways, and printing is no exception. Under Unix, there are no application-side printer drivers, and print jobs are just raw datastreams in files that are

sent to printer devices. Moreover, the print queue management tools and spooler (the Line Printer Daemon, or LPD, process that transfers queued data to the actual printer) are sublimely unaware of the printer type and the meaning of the content.

To give you an idea of printing under Unix, let's consider using a Berkeley-style Unix system (as in Sun Solaris and Linux). If we had a postscript file called *myjob.ps* to print, we'd enter the command:

*cat myjob.ps | lpr*

In this command line, the *cat* command simply reads the input file and displays it on the screen. For Unix novices, the vertical bar ("|") is a "pipe" that takes application output sent to the screen (the screen is the default output device) and redirects it to another application's standard input (by default the keyboard), which in this case is *LPR*.

*LPR*'s process is fairly simple. It takes the redirected datastream and writes it to the printer queue, which is a subdirectory. There the file — now a print job — sits until it is serviced by *LPD*.

Of course, you could send the file (or a list of files) directly to *LPR* thusly:

*lpr filename1 filename2 ...filenameN*

An *LPR* command line with all of the options looks like:

*lpr filename1 -P printername -#n -m*

*-P* sends the job to a particular printer; *-#* specifies how many copies to print; and *-m* requests that users are sent e-mail when *LPD* has printed their jobs.

You can view the print queue with the Unix command *lpq*, which shows what jobs are waiting, who submitted them, and the printer the job is destined for. If you have the right privileges, you can see all jobs in the queue and select which jobs are shown based on various criteria.

If you want to do something as wild as delete a print job, you need to know its name (use *lpq*) and then the command, *lprm*, as in:

*lprm jobname*

Now under Unix, the nearest thing to a Windows printer driver is a printing filter. This is necessary when you, for example, send a plain text file to a postscript printer. Without a filter to tell the printer what to do, the result will be a mess.

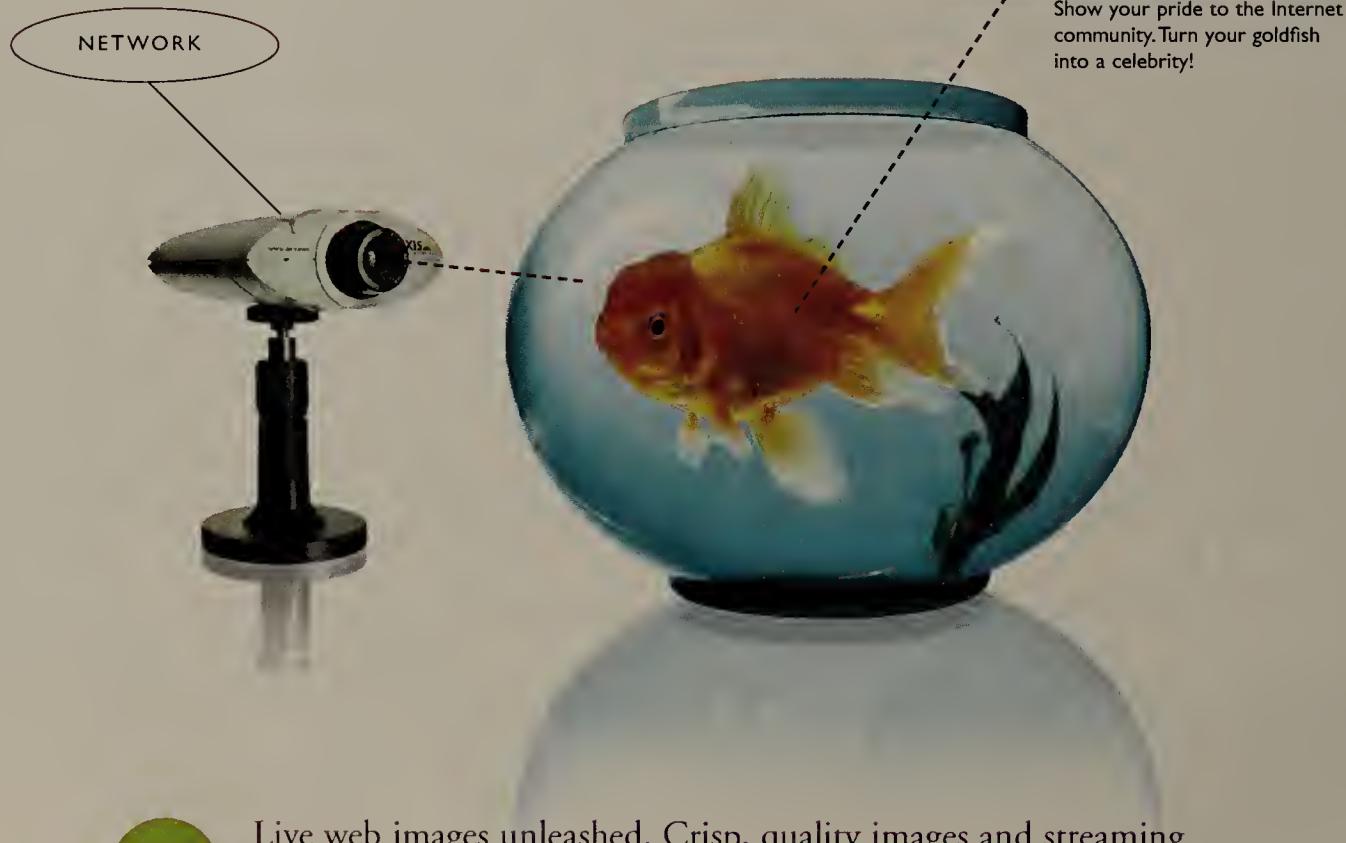
Printer filters are specified in the *printcap* system control file that defines the name and characteristics of each printer. When a filter is specified for a particular printer, as soon as the job is queued, the filter program is run and attempts to determine the content type and modify it to ensure it can be output correctly.

There's a lot more we could say about Unix printing, and if Gearhead sees a raging demand we'll go deeper into the topic.

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## Editorial

### What's the word?

Each week the editors at *Network World* do their best to cut through marketing hype and dish out reality checks. That's one of our primary roles and, done right, results in scoops and editorial awards.

To us, industry buzz is two-faced. As technology professionals, we love the buzz. Buzz is what's hot, what's in the pipeline, the gossip and the cool. We tend to hear the buzz early because companies pound us with news about technology research, new business models and unreleased products. By the time a deployable product or service emerges we've been charting its progress for months, if not years.

The other face of buzz is the nonsense, the poetic license intrinsic to marketing campaigns. It becomes the tail wagging the dog when every company decides that its product must brandish the latest buzz label. For example, ISPs suddenly become Application Service Providers, document management companies become business-to-business portals, and asset management software makers become enterprise resource planning suppliers. This is the buzz that makes us roll our eyes, claim ourselves cynics and write stories that cry out for a return to reality.

Slicing out the hyperbole is so important to us that every year we dedicate a special issue to the task — the Buzz Issue. In the Buzz Issue, we pause from the daily grind to focus on technologies generating buzz. What's hot, and deserves to be, and what seems hot but really is bunk.

As always, we want you to weigh in. Tell us which technologies have made it into your test labs (Wireless Application Protocol, customer relationship management, Layer 4/Layer 7 switches, others?), which are already deployed, which will never make the grade.

We've made it easy for you to talk to us. We've compiled a short survey on Network World Fusion ([www.nwfusion.com](http://www.nwfusion.com), DocFinder 8727) and opened up a forum for the topic. We've kept the survey short so it shouldn't take more than 5 minutes to complete. The results will be published on Sept. 11 in the Buzz Issue.

If you've got another 5 minutes, please join our Buzz forum. Here you can play clairvoyant and predict which emerging technologies will create the next buzz. Are your vendors whispering words like Bluetooth, end-to-end Internet supply chain or content integration in your ear? Start a thread and give us your take.

What methods do you use to spot a true technology breakthrough from one cooked up in marketing minds? In other words, what's the word on the buzz?

— Julie Bort  
Senior editor  
[jbort@nww.com](mailto:jbort@nww.com)

#### Message Queue

### FIREWALL CLARIFICATIONS

One challenge of introducing a new technology such as distributed host-resident firewalls is the missionary work involved in educating the market. Articles like "Second line of defense" ([www.nwfusion.com](http://www.nwfusion.com), DocFinder 8631) go a long way toward helping the industry meet this goal.

But I'd like to comment on some of the points made in the story. For instance, the story says I "[acknowledge] the CyberwallPLUS line for server and desktop firewalls has no reporting capability." Actually, we do provide quite detailed reporting. In the current version of CyberwallPLUS, however, these reports are not collected centrally.

Also, John Pescatore of Gartner Group says Web server-resident firewalls won't be widely used to secure Web servers due to administrative complexities, because Webmasters tend to make precipitous changes that could negatively impact the embedded firewall. Most changes on Web servers don't affect the resident firewall software because they are at the application level. Changes made to Web servers that could require resident firewall changes would also require the same changes in a traditional perimeter firewall. Especially in Web server farms, resident firewall functions are quite straightforward, substantially strengthening operating system weaknesses, and can be pushed remotely to large quantities of servers.

As for hardware and silicon-level solutions, while they have their place and may possess an advantage in processing speed, the distributed software firewall offers greater flexibility and superior speed in adapting to new intrusions and new protocols.

Avi Fogel  
President and CEO  
Network-1 Security Solutions  
Waltham, Mass.

### TECH TALK

I agree in principle with Chuck Yoke's assertion that the latest technology is not always the best choice ([www.nwfusion.com](http://www.nwfusion.com), DocFinder 8632). However:

- While Token Ring is superior to Ethernet in that it doesn't break down as badly when oversubscribed,

Send letters to [nwnews@nww.com](mailto:nwnews@nww.com) or John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

[www.nwfusion.com](http://www.nwfusion.com)

## MORE ONLINE

Find out what readers are saying about these and other topics.

**DocFinder 8721**

switching technology has largely eliminated oversubscribing, and the simpler Ethernet protocols mean chipsets are cheaper to manufacture.

- While ATM is arguably superior to Ethernet for constant bit rate content such as voice and video, its small packet size and virtual-circuit-only model make it bad for many data applications.

- Although Open Systems Interconnection dealt nicely with the problems of routing, directory services and data formatting in a way that IP didn't at the time, I've never heard anyone call it more robust than TCP/IP before. Robustness is one of the fundamental design considerations of IP.

- Novell Directory Services (NDS) is more mature than Active Directory, but Novell has seriously dropped the ball in its two important areas: multi-platform capabilities and high security. The former by failing to work properly with other vendors and the latter by failing to market the superior security features of NDS' RSA-based security mechanisms vs. the Microsoft-mutilated Kerberos.

- IPv4 may be around for a long time in limited areas, but the backbone providers are sure to switch to IPv6 in the near future because it is now close to impossible to get new IPv4 addresses or to do efficient routing — problems easily solved by IPv6.

Chris Calabrese  
Montclair, N.J.

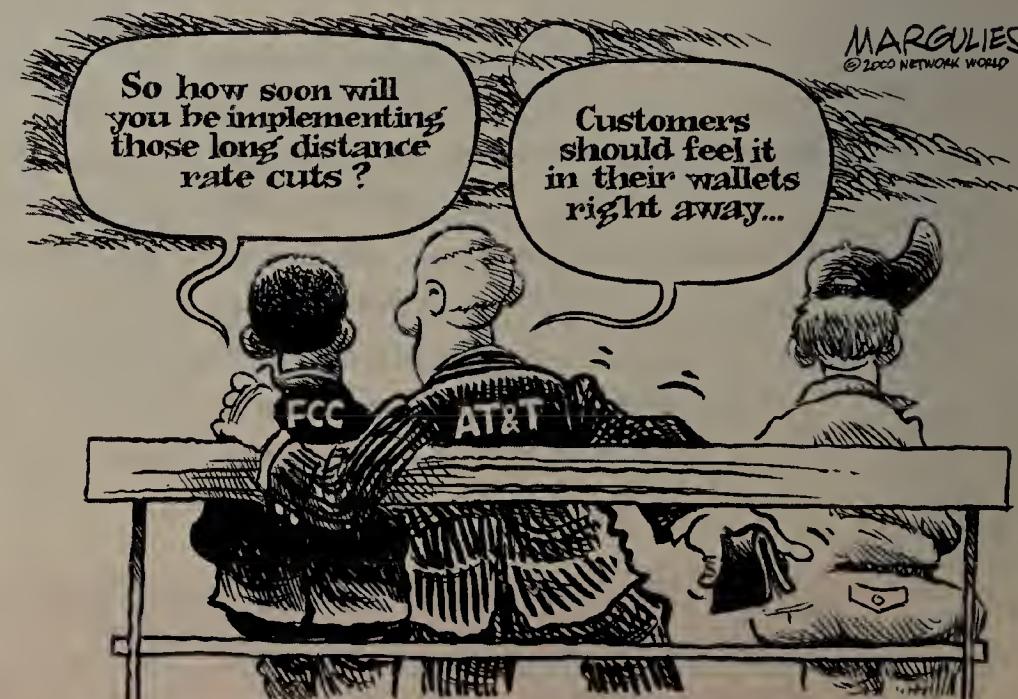
### WHY THEY BUY

Regarding Kevin Tolly's column "New world math" ([www.nwfusion.com](http://www.nwfusion.com), DocFinder 8633):

More and more I find companies getting acquired for astronomical prices and can't figure out what the buying companies are thinking. Prices keep going up, but buyers are getting less and less. It is similar to what is going on in my industry, recruiting — salary demands are going up and the bottom feeders are being paid well for doing a less-than-adequate job.

Maybe these two phenomena are going hand in hand. Maybe the acquiring companies are purchasing talent that they can't find and that is why the numbers don't make sense.

Kirk Davis  
Director, Business Development  
Management Recruiters of Morris County  
Florham Park, N.J.



Bottom Line . Joel Snyder

## MCI WORLDCOM SHOULD FINISH WHAT'S ALREADY ON ITS PLATE

**M**CI WorldCom is continuing to push hard for its merger with Sprint, now offering to dispose of one of the Internet's unappreciated jewels, Sprint's Internet business. All this is in the name of competition, since WorldCom would presumably control more or less all the packets, phone calls and fiber optics in the world if no one was watching.

I have one request to make of the regulators in Brussels and Washington: Please, please, please, don't let WorldCom and Sprint merge. My plea has nothing to do with competition; it has everything to do with customer service. In his insatiable quest to beat Bill Gates and Larry Ellison to become the richest technodude in North America, WorldCom CEO Bernie Ebbers has forgotten those poor people who actually made him rich — the customers.

Since the megamonolithic-monstrosity of WorldCom was created, service has gone to hell. Nothing can be done in real time; nobody is empowered to solve problems. Oh, and prices have gone up. Way up.

All WorldCom has brought to the table is an enor-

mous cadre of obsequious customer service reps ("I'm terribly sorry you had to hold, sir"), manning the phones 24 hours a day, who don't seem to be able to do anything.

As a customer of the new, improved, WorldCom, my company hasn't seen the benefits of consolidation. One bill for all services? That would be OK if the bill were correct. But when WorldCom acquired Brooks Fiber in 1998, errors were made in moving the billing data from one system to another. We've been complaining about it for 20 months, and WorldCom still hasn't figured it out.

One contact for sales? Sounds great, but the benefits escape us. Line installs and deinstalls now have to move through the WorldCom bureaucracy, and a six-month delay to do anything is average.

One company for all your needs? That would be wonderful if it were really one company. In March we ordered a circuit from UUNET, WorldCom's Internet service provider division, and had every expectation that it would be installed within 30 days. The official UUNET service-level agreement (SLA) is 40 business

days. We're still waiting for that line to be installed — they blew the SLA a long time ago. Meanwhile, the UUNET techs are trying to figure out a way to make the combined fiber networks of UUNET, MCI, MFS and WorldCom stretch from Tucson to Phoenix.

Sprint customers, beware! Inside WorldCom there are pockets of excellence, people who know their stuff and make the network run. But the bureaucratic monstrosity smothering them makes WorldCom a darn hard company to do business with.

Will things get better? Perhaps. WorldCom certainly can't continue to do business this way. As long-term contracts begin to end, customers will search for other suppliers. The end result, today, is that WorldCom hasn't been able to completely merge the companies it already has. And now it's hungry for more? Someone should tell Bernie Ebbers he can't have dessert until he finishes his peas.

*Snyder, a Network World Test Alliance partner, is a senior partner at Opus One in Tucson, Ariz. He can be reached at Joel.Snyder@opus1.com.*

Yankee Ingenuity . Howard Anderson

## I WANT WIRELESS BROADBAND, AND I WANT IT NOW!

**D**o you have, or want to have, broadband to your home? According to Yankee Group research, about 4% of U.S. homes have broadband in the form of DSL or cable modems. At least 16% will have it by 2004, and about 40% want it. That's about 40 million homes that are lusty for broadband.

The problem is that wanting and getting are two different things. If you wait for your cable or telephone company to offer broadband, you may wait forever — and even then, expect some trouble. When I ordered an ISDN line from my telco, the installer had to ask me for help.

Fortunately, an alternative is emerging — wireless broadband. You call your ISP and it delivers a little box that plugs into your computer. Twenty minutes later, you are screaming along at 1M bit/sec — and paying no more than \$40 per month. This is not a dream or a futuristic scenario; it's going to happen within six months.

"Wait a minute, Howard, is this really possible?" you ask. Yep, both possible and soon to be available through your ISP. It will be coming to you over the unlicensed part of the spectrum, the part reserved for microwave ovens and other consumer electronics products.

This is getting interesting. We hadn't thought we could get broadband over wireless before, but it looks like we can — and we can use the 2.4-GHz

and 5-GHz spectrum to build a micro-cell broadband wireless network where there is no line-of-sight requirement or external antenna requirements. For about \$1 million, you can provide a wireless broadband infrastructure capable of handling 3,500 subscribers, which is nothing.

A few years ago, Nick Negroponte, who teaches with me at the Massachusetts Institute of Technology, suggested we got it all wrong: America was using wireless communications to send broadband (TV signals) and wired communications to send narrowband (telephone signals). He suggested we switch, and use wireless for narrowband (cellular) and wired for broadband (fiber to the home). I am suggesting that solution is obsolete: We can send both narrowband and broadband to the home — wirelessly.

Look, almost half of the U.S. population today is ticked off. They can't get broadband through DSL or cable modems, and they are getting the runaround by incumbent local exchange carriers and cable companies. The IEEE 802.11 people have known for some time that, worldwide, certain parts of the spectrum could handle broadband.



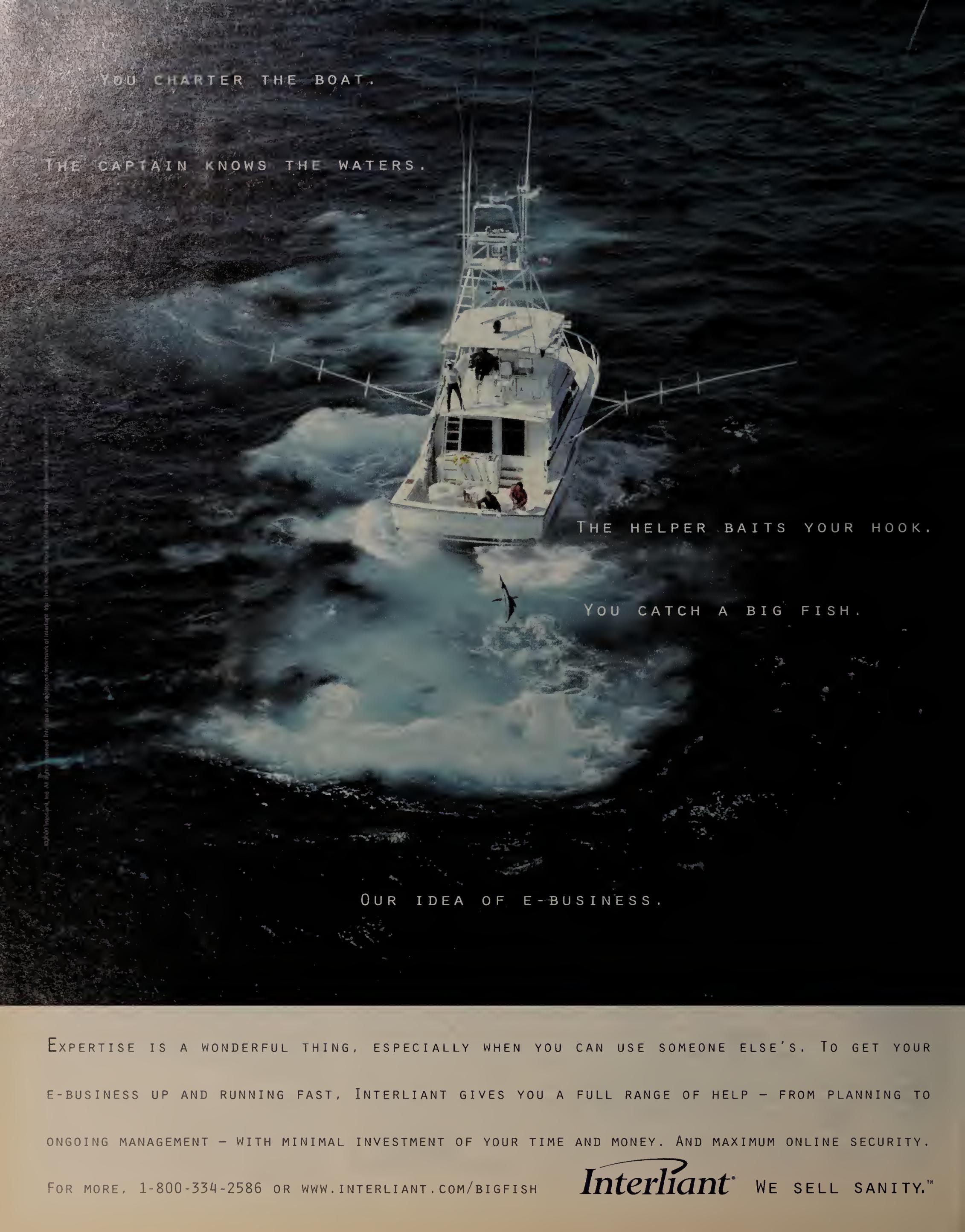
Demand is growing 48% per year for just dial-up and almost twice that for broadband. My fellow academics at MIT are talking about a new world of object technology that can handle all the streaming media you want — wirelessly. Recently I was quoted in *The New York Times* as saying, "You'll give up your first born before you'll give back your cable modem!" When my kid, Spike, called to ask if this was really true, I told him, "Not just any modem, but a high-speed modem."

But now I want mobility. I want to move around my house with my laptop, I want a megabit of bandwidth and I want it now! Will that satisfy me? No. I want 10 megabits, wirelessly, in five years. I want to roam, and I am willing to pay 50 bucks a month to be able to do so — and so are the 40 million other households that I hang with.

So let me be clear: I want I megabit, I want wireless, I want roaming, I want one-hour installation. I want it now. I want to pay up to \$50 per month. I want to pay less than \$300 for the customer premises equipment portion. I want it to my computer, laptop, PDA and, eventually, my car.

I don't really care who gives it to me: my ISP, cable provider, computer manufacturer, milkman or bookie. As Peter Finch said in the movie "Network," "I am mad as hell and I am not going to take it anymore."

*Anderson is senior managing director of Yankeeek, a venture incubator in Cambridge, Mass. He is also chairman of The Yankee Group and the William Porter Distinguished Lecturer at the Massachusetts Institute of Technology. He can be reached at handerson@yankeeek.com.*

A large fishing boat with a white hull and a blue stripe is positioned in the center of the frame, moving through dark, choppy ocean water. In the foreground, a shark is captured mid-jump, its body arched as it leaps out of the water. The background is a dark, cloudy sky.

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Opinions

# FACT-FICTION

## Is Internet voting fair?

Advocates cite greater participation and convenience; opponents say online voting is discriminatory.

YES

BY EILEEN MCGANN

Online voting in legally binding elections is an idea whose time has definitely come. As the 21st century begins, the key question about Internet voting is no longer whether it will ever happen, but rather, how soon it will begin. Internet voting provides a unique — and much-needed — opportunity to increase voter participation by making the voting process more accessible, more convenient and less time-consuming.

Current U.S. voter turnout is so low that a minority of the eligible voters routinely elects our presidents. In the 1996 presidential election, for example, only

49% of eligible voters participated. It is at the very essence of the concept of democracy that voting be as effortless as possible. Yet one of the reasons for the exceptionally low turnout is simply the amount of time involved in voting. According to the U.S. Census Bureau, registered voters cite time constraints as the single major reason for not voting.

Because the majority of Americans have access to the Internet, online voting will permit most Americans to vote easily at home or at work at any time throughout each Election Day, whether in a presidential primary or local school board election. For those without direct Internet access, libraries, schools and

civic organizations will provide community access to the online voting booth.

Critics of Internet voting claim that it improperly discriminates against minorities, who are statistically less likely to have Internet access. By all counts, minority usage of the Internet is significantly increasing and will continue to grow. It should be a national goal to achieve online parity among all voters. But of course, no one will be required to vote online. Conventional polling places and absentee ballots will remain available. Online voting will, at least in the beginning, merely be a supplement to traditional voting.

Other critics fear that online security will be lax and will result in fraudulent voting. Experience to date has shown that such a fear is unfounded. Last March, the Arizona Democratic Party conducted its presidential primary elections on the Internet. While a total of only 13,000 people had voted in the 1996 primary, more than 60,000 people voted online this year — without any fraud or hacking. The Arizona experience proved that the integrity of the voting process would be protected in secure online voting.

So Internet voting does work and will likely increase voter participation substantially. In addition, in conjunction with online voting, the Internet has the potential to reduce voter apathy by providing valuable information about candidates, issue positions and voting records, and especially by enabling spontaneous communication between voters and elected officials. This ongoing pattern of consultation and interactivity will reinvigorate our democracy and bring the alienated and disenfranchised back to the process. It's time to start.

McGann is CEO of Vote.com, a fully interactive Web site designed to give Internet users a voice on important public issues. She can be reached at [elmcgann@aol.com](mailto:elmcgann@aol.com).

NO

BY DEBORAH PHILLIPS

Internet voting initially presents itself as a benevolent new platform for election administration, with the potential to reach voters not currently engaged in the process. But given the inequities of access to the Internet, "remote" Internet voting — voting via the Internet in a nonpolling-place environment such as a home, office or library — results in discrimination.

The civil rights movements centered on achieving equity of access to the ballot box. But once the vote was secured for minorities, devices such as literacy tests were often used to prevent minority voting. Given the disparity of Internet access, remote Internet voting represents a new-millennium version of a literacy test.

According to a 1999 Department of Commerce study, "Falling Through the Net: Defining the Digital Divide," based on 48,000 in-person interviews — many with individuals who are not connected — whites are more likely to have Internet access from home than most racial and ethnic minorities have from *any* location. Nationally, only 19% of African-Americans and 16% of Hispanics have Internet access from any location, compared with 38% of whites. Taken together, African-American and Hispanic households are only 40% as likely as white households to have Internet access. And the divide is growing because, although minorities are slowly gaining access, white access is accelerating rapidly. Simple economics are not the engine driving this disparity: Among those with incomes of \$20,000 or less, whites are five times more likely to have Internet access than minorities.

Even if special pains were taken to create cybervillages in publicly accessible locations, remote Internet voting would be less likely among minority voters. By making voting more convenient for voters who have ready access — predominantly white — a bias is set up that boosts the potential turnout for connected voters while diluting the power of individual minority voters' ballots.

The implications are profound. Remote Internet voting could be used to manipulate election outcomes by structuring access to favor the most Internet-connected. For example, in a statewide referendum vote on letting a toxic waste dump be located in a predominantly minority area, Internet voting could be used to flood the election with favorable votes while disadvantaging those most likely to be affected.

Equity of access is easily addressed by simply removing remote Internet voting from the election equation. By confining Internet voting to polling places, you immediately bring parity to the process, while gaining time to address the complex issues of how to bridge the digital divide. Otherwise, the premature use of remote Internet voting will result in an America where all voters are created equal, but some are more equal than others.

Phillips is chairman and president of the Voting Integrity Project, a national, nonpartisan, nonprofit voter rights organization. She can be reached at [votingproj@aol.com](mailto:votingproj@aol.com).

[www.nwfusion.com](http://www.nwfusion.com)

## WHAT DO YOU THINK?

Is Internet voting fair? Continue the debate online with Vote.com's Eileen McGann and the Voting Integrity Project's Deborah Phillips.

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KIEFER PHOTOGRAPHY/MTG

feature

The

# Omega

**How a Secret Service agent, a data recovery team to secure the first ever**

BY SHARON GAUDIN

**T**im Lloyd thought he had committed the perfect electronic crime.

Lloyd, a former network administrator at Omega Engineering Corp., thought he had not only destroyed his former employer's manufacturing capabilities, but also had destroyed the evidence that would link him to the crime as well.

The one thing Lloyd didn't count on was that there were investigators with enough computer savvy to put the pieces of what prosecutors described as his "elaborate and Machiavellian plan" back together and trace the evidence to Lloyd's own doorstep.

In a purely legal sense, Lloyd's conviction in a Newark, N.J., federal court last month was a precedent-setting victory that proves the government is capable of tracking down and successfully prosecuting corporate computer crime.

In human terms, it's a case of a trusted, 11-year employee gone bad. Lloyd built the Novell NetWare computer network at Omega South and then blew it up with a software time bomb after he fell from corporate grace and was ultimately fired for performance and behavioral problems. Today, he faces a sentence of up to five years in prison.

In a business sense, the loss of its key manufacturing programs cost Omega, which builds measurement and instrumentation devices for customers like NASA and the U.S. Navy, more than \$10 million, dislodged its footing in the industry and eventually led to 80 layoffs.

The 1996 incident set off an intense investigation that brought together the U.S. Secret Service and one of the world's top data recovery and forensics experts to piece together the evidence that would ultimately lead to Lloyd's arrest and conviction.

"It's a unique case even to this day," says Leo Jackson, assistant to the special agent in charge with the U.S. Secret Service. "This was probably the first type of investigation [of this kind] that the service ever did.... It was about computers, but this case was good old hard detective work."

**TIM LLOYD,**  
former network  
administrator at  
Omega Engineering,  
was recently  
convicted of  
computer sabotage  
in a precedent-  
setting case.

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# ggd files

**recovery expert and a federal prosecutor**  
**conviction on federal computer sabotage charges.**

## THE CRASH

July 31, 1996

Omega South manufacturing plant, Bridgeport, N.J.

Between 8 and 8:30 in the morning, a worker at Omega Engineering's manufacturing plant started the day by logging on to the central file server. Instead of booting up, a message came on the screen saying an area of the operating system was being fixed. Then the server crashed, and in an instant, all of the plant's 1,000 tooling and manufacturing programs were gone.

"I didn't know why the server was down," said Omega South Plant Manager Jim Ferguson, who was immediately alerted to the crash. "I just knew we had to get it back up. We needed those programs."

But the server wasn't coming back up. So Ferguson ordered that the manufacturing machines be kept running with programs that had been loaded the day before. It didn't matter if the orders already had been filled. He had to keep the machines running.

Then Ferguson went to get his salvation — the backup tape. If the file server didn't come back up, he still would have all the programs safely stored on a backup tape kept in a filing cabinet in the human resources department.

But the tapes were gone. It was later discovered Lloyd had gone to Omega South's human resources department on July 1, taken out the backup tapes and never returned them, according to testimony.

Ferguson then turned to the workstations connected to the file server. The programs — at least a good chunk of them — should have been stored locally on the individual workstations. But the programs weren't there.

Ferguson learned that Lloyd had removed the programs from the workstations just days before he was fired and had centralized every-

thing on the one file server.

"It was an awful feeling," Ferguson recalled. He quickly telephoned Lloyd. "Tim, Tim do you have the backup tapes?" said Assistant U.S. Attorney V. Grady O'Malley describing to the jury Ferguson's desperate call to Lloyd that day. "Tim, we need those tapes. Are you sure you don't have the tapes?"

Ferguson said Lloyd told him he didn't have the backup tapes. Lloyd, according to testimony, said he left them in the upper left corner drawer of his desk at Omega. But Ferguson himself had helped clean out Lloyd's desk. There was no backup tape.

## THE AFTERMATH

In the days that followed the crash, Omega called in three different people to attempt data recovery, and Ferguson called Lloyd again and again.

Ferguson even went to Lloyd's house to plead in person. Lloyd handed Ferguson a few pieces of Omega property during the visit, but no tape.

"I had trusted Tim Lloyd completely," Ferguson told the jury. "We relied on Tim Lloyd. He was responsible for the security of the system."

Lloyd, the only Omega employee responsible for maintaining, securing and backing up the file server, wasn't replaced after he was fired. That meant Ferguson and other Omega executives had to turn to outside experts for help.

Five days after the crash, Ferguson was told by yet another data-recovery technician that the programs were gone and there didn't appear to be any way to get them back. Ferguson started shifting workers around the department and shutting down machines that were running out of raw materials or creating excess inventory. He took steps to hire a fleet of programmers to start rebuilding some of

## e-men target e-crime

The Tim Lloyd computer sabotage trial may be the first of its kind, but agents at the U.S. Secret Service expect it won't be the last.

"This will be the crime of the future," says Leo Jackson, an assistant to the Special Agent in Charge with the Secret Service. "Four years ago, we were in the infancy stage in terms of technology. We're more prepared today. . . . The reason why we're expanding the number of people we have and dedicating more manpower and training is because we see the future."

The Secret Service, which splits its focus between protecting heads of state and conducting criminal investigations, is one of the government's biggest weapons against computer crime. With technology advancing at Internet speed, staying ahead of the learning curve has become a major focus for the government's fastest growing agency.

The Electronic Crimes Special Agent Program began with a handful of specially trained agents back in 1987. Today, that number has grown to 155, and it's expected to exceed 200 by year end. The agency also is giving current agents specific electronic crime training, recruiting new agents with high tech skills, working with industry leaders and analyzing new technology and products before they even hit the market.

This push is based on the fact that agents see high tech as the basis for an increasing amount of crime — whether it be corporate sabotage, credit card fraud or the newest tool for organized crime. Computers and the Internet give criminals their chance to be borderless and anonymous.

"Why would I sell drugs on the street, when I could jump on the Internet tonight [and steal some money that way]?" says the Secret Service's Ray Ventura. "It's low risk crime. You're in your house, in the privacy of your own home. . . . This is the future. We're going to do whatever it takes to keep pace."

The Secret Service also is focusing on analyzing new products and services, and alerting the vendor to any security weaknesses they find.

"Recently, we have made a special effort to contact companies that we have found have systemic weaknesses in products they're offering," Lugo says.

And the new technology they're watching the closest is wireless.

"You have multiapplication devices going wireless," Lugo says. "All that information is being transmitted out in the open."

The upshot of these efforts is that the Secret Service is changing the commonly held view that the average computer criminals can outsmart the average law enforcement official.

"People think, 'I can do this and how can they ever trace it?'" Ventura says. "I don't think they comprehend the experts we're putting in the field."

—Sharon Gaudin



ILLUSTRATIONS BY MÉLANIE BAILLARGÉ

the 1,000 lost programs.

And he called in Ontrack Data International, a data-recovery firm out of Eden Prairie, Minn. Technicians from Ontrack, which handled 25,000 data recoveries in 1999 alone, made a mirror-image copy of Omega's damaged hard drives at the local office of the Secret Service and began what would be a months-long search for the missing programs.

"We were doing everything we could. The other step would have been to shut down and lay off everybody," Ferguson told the jury. "We were just starting to get an idea of all the impact and what this was going to mean and how it was going to affect us."

The crash still affects Omega.

Ralph Michel, Omega's chief financial officer, testified that the software bomb destroyed all the programs and code generators that allowed the company to manufacture 25,000 different products and to customize those basic products into as many as 500,000 different designs.

"That department gave us flexibility to modify our products and gave us the ability to lower our costs," said Michel, who noted that Omega had shown 34 years of growth but started slipping after the computers crashed. "We lost both of those advantages in July 1996. . . . I believe the server crash was one of the principal reasons for the drop in sales, if not the reason."

"We will never recover," Ferguson told the jury.

## THE CRIMINAL INVESTIGATION

August 12, 1996

Office of the Secret Service, Washington, D.C.

Omega executives put in a call to the U.S. Secret Service and told them they suspected the file server crash was the result of a criminal act.

Two days later, Special Agent William Hoffman arrived at Omega South. At the time, a relatively new statute made computer sabotage a federal offense if



STEVE WOIT/MPG

**"The files that had been deleted were surgically removed from the database. They specifically were the files the company needed to survive."**

**WILLIAM D. HOFFMAN, Special Agent, Secret Service**

of the incident — he had complete access to the network, he had Novell training and he was the last one known to have had the backup tape.

## THE SEARCH WARRANT

August 21, 1996

Timothy Lloyd's house in Delaware

At this point, Hoffman had enough to get a search warrant and arrived at Lloyd's home early in the morning.

Hoffman, working with several other agents from the Secret Service, went through Lloyd's home and garage, seizing about 700 pieces of potential evidence. That haul included computers, motherboards, keyboards, more than 500 disks, CD-ROMs, 12 hard drives and tapes. "It was enormous," Hoffman said.

What immediately stuck out were two backup tapes, which had both been erased. One was labeled "Backup" with the dates "5/14/96" and "7/1/96" and

it affected a computer used in interstate commerce and caused more than \$5,000 worth of damage to the company over a 12-month span.

"This wasn't just a simple investigation of a guy's PC at his home," said Hoffman in an exclusive interview after the trial. "We were looking at the network of a major corporation. . . . The sheer magnitude of it was beyond our experience at the time."

Hoffman, who has been with the Secret Service for four years, splitting his time between criminal investigations and protective service, started his probe by interviewing about 50 people at Omega, everyone from the company owners to people working on the shop floor.

"It was apparent to me very early on that this was not an accident," Hoffman said. "The files that had been deleted were surgically removed from the database. They specifically were the files the company needed to survive."

And from the beginning, all roads led to Lloyd.

Hoffman noted that Lloyd was the only person who was tied to several key facets

Tim Lloyd's name. (July 1, 1996 was the date that Lloyd had asked for and been given Omega's backup tape.) Both tapes had been reformatted, a process which erases the data, the day before Ferguson visited Lloyd's house seeking the tapes.

"The moment I found out the backup tapes had been reformatted, my level of suspicion was elevated dramatically," said Hoffman, who acted as guardian of the evidence.

With the tapes, the 12 hard drives seized from Lloyd's house, and mirror images of the damaged hard drives from Omega's shop floor, Hoffman called in Ontrack.

## CRACKING THE CODE

February 1997

Ontrack offices in Minnesota

When Ontrack's data-recovery specialists realized that the programs had been blown up and scattered in random chunks through the million different storage spaces on the NetWare 3.12 operating system, they contacted Greg Olson, their director of Worldwide Data Recovery Services.

"We do data recoveries when companies are losing millions of dollars a day," said Olson, who has written data-recovery tools for Novell's NetWare operating system and even was brought in by the U.S. government to recover files from some of Kuwait's comput-

Continued on page 66

## The malicious code

1.) 7/30/96

The date is the triggering point in the code string, executing the rest of the commands after July 30, 1996.

2.) F:

Gives access to the server.

3.) F:\LOGIN\LOGIN 12345

Automatically piggybacks User 12345, who has supervisory rights and no password security, with whichever user first logs on to the file server.

4.) CD \PUBLIC

Gives access to the public directory, a common storage area on the file server.

5.) FIX.EXE /Y F:\\*.\*

FIX.EXE is a DOS-based executable that served as the deletion command but showed the word 'fixing' on the screen instead of 'deleting.' This is a slightly modified version of Deltree.exe in Microsoft DOS.

/Y answers 'yes' to the implied question of 'Do you want to delete these files?'

F:\\*.\* refers to all files and folders on the entire server volume.

6.) PURGE F:\ALL

Causes all of the deleted information to be immediately purged.

## The Tim Lloyd saga

October, 1985

Tim Lloyd joins Omega Engineering as a machinist.

1989

Lloyd proposes computer network at Omega South.

1989

Lloyd is promoted to supervisor.

1990

Lloyd becomes LAN manager.

1995

Lloyd is removed from a project after his failure to do quality tests causes massive customer returns.

May 31, 1995

Lloyd is written up for stalling efforts to produce needed components, inability to work as part of a team and allegations of mistreating coworkers.

September 1994

Lloyd receives Novell certification training.

July 1995

Lloyd is demoted from supervisor to engineer.



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ers damaged during the Gulf War. "It's not uncommon for me to be working with people in panic mode, but I've never seen this massive of a deletion in my 10 years of experience."

Olson said a few oddities about the way the file server was set up immediately raised red flags for him. "It was odd that the user accounts, most of them, had supervisory rights," he explained. "It's odd that Account 12345 had supervisory rights and no password."

Olson began by doing searches for common commands or phrases used in deletions, such as DEL /S; \\*.\*, DEL F:, DELTREE F: and PURGE F:.

"I was just thinking of common things to search for and these were taking hits," Olson said. "Immediately, I knew this was hot when I saw PURGE take a hit."

Olson continued to systematically pull programming strings sitting in their raw form out of the code wreckage until he had pieced together six lines that looked like they could do some real damage.

"What's unusual are these six strings together," he said. "First of all, the date was meaningful because the data loss was the next day. The second thing was this logon account 12345, which had supervisory rights and no password. The next thing unusual is the fifth line that refers to all the data on the server, and /Y is a common command-line switch to make the program default to yes."

"This is the type of stuff you'd find in a utility to do mass something," Olson added. "The last thing is the PURGE. Having the PURGE there with the F:\ refers to the server and everything on it. And combined with that date, it was very unusual. You're not going to go into another company's file server and find that combination of strings. That was definitely a red flag situation."

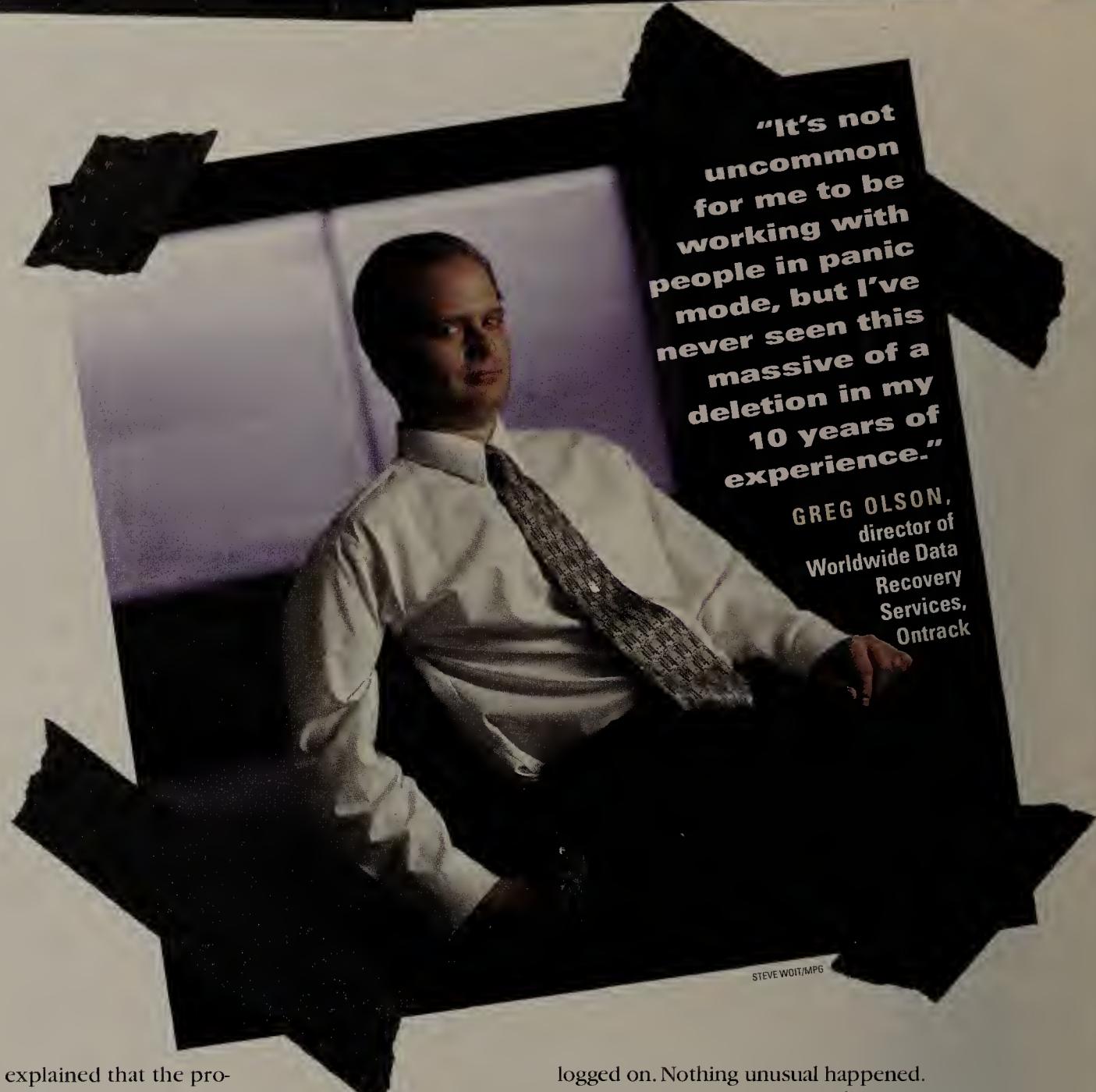
Next, Olson set out to determine what part FIX.EXE — which is not a NetWare executable and would not normally be found on a NetWare system — played in the string. The way the strings were set up, he said he knew FIX.EXE must have deletion powers, but now it was a matter of proving it.

So Olson went out on the drive and pulled off 670 raw executables. He tested each and found one that appeared to be DELTREE.EXE, a DOS-based command that enables administrators to delete files from Windows operating systems.

"I pulled DELTREE and executed it with these command lines to see what would happen," Olson said. "I was shocked when the normal DELTREE function, saying 'deleting this, deleting this', was replaced with 'fixing this, fixing this.' I knew I was on to something there."

What he knew was that the DELTREE executable had been modified to disguise its deleting message by dropping in a 'fixing' message in its place. That was FIX.EXE. That one step camouflaged the deletion process so the user logging on to the system would never know what was actually happening.

Those six lines of code, which made up the time bomb, were written so it would detonate on boot up, no matter which user logged on first. Olson



explained that the program deleted everything except NetWare-specific utilities, which are designed to be undeletable. And any deleted files normally go into a specific folder, where they could still be retrieved if someone knew how to look for them. The purge command, though, wipes away any trace of the 'addresses' for those deleted files, so even though the data is still sitting on the server, there's no longer any way to find them.

"Purge erases all evidence of where the data is," said Robert Hackett, remote data-recovery operations supervisor for Ontrack. "If you do a delete, it's like somebody putting paper in the trash bin. Purge is like shredding the paper into pieces ... and taking the hundreds of thousands of pieces and tossing them up in the air."

#### Putting the code to the test

To test the code, Olson took an exact copy of the Omega file server and set up a test environment with an attached workstation. He then set out configuring the system for various dates prior to the July 30, 1996 date at the beginning of the code string.

Olson configured the system for Jan. 1, 1996 and

logged on. Nothing unusual happened.

Then he tried April 30, 1996 and logged on. Nothing unusual happened. Then July 30, 1996. Nothing.

Then he configured the system for July 31, 1996, the exact date of the crash at Omega. "I logged on and everything on the system was deleted," he told the jury. "On the screen, it was saying it was fixing an area of the system, but actually it was deleting everything."

"The puzzle had been put together," he added. "There's absolutely no doubt in my mind that this is what caused the data loss."

Along with the six lines of code that did the damage, Olson also found three similar test strings.

Those three programs, each similar to the six lines of code in the damaging program, were dated Feb. 21, April 21 and May 30, 1996. One substituted a simple test folder, which could have held as little as one word, for the line in the damaging code that called for everything on the server to be deleted. The third test program dated for May 30 was set up exactly as the code that brought down the system.

"If I wanted to test [my code] and didn't want to affect the use of the server, I would test it using a

Continued on page 68

## The Tim Lloyd saga

May 30, 1996

Third test version of the time bomb is created.

April 21, 1996

Second test version of the time bomb is created.

Feb. 21, 1996

First test version of the software time bomb is created.

April 23, 1996

Bad performance memo is put in Lloyd's file.

June 5, 1996

Lloyd has first job interview at W.L. Gore.

June 1996

Lloyd removes programs and code generators from workstations, centralizing them on the file server.

May 20, 1996

Lloyd attends job fair.

June 21, 1996

Lloyd has second job interview at W.L. Gore.

July 1, 1996

Lloyd asks for and is given the backup tape for the file server.

July 10, 1996

Lloyd is fired.

July 10, 1996

Lloyd checks off statement on his exit interview questionnaire saying he does not have any Omega property at home.

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# How to protect your network

- Make sure no one person is controlling the system front to back.
- Require every person logging on to use a password.
- Assign supervisory rights to as few people as possible.
- Back up mission critical systems daily.
- Back up all systems weekly.
- Have a strict sign in/sign out system for backup tapes.
- Always have a current copy of the backup tape stored remotely.
- Do backups of desktops and laptops as well as servers.
- Rotate backup tapes — don't keep using the same one over and over again.
- Change passwords every three months.
- Keep servers in a secured area.

- Stay up to date on software patches.
- Use intrusion detection software that alerts you when you are being hit.
- Make sure two pairs of eyes have checked code before it is entered into the system.
- Have an information security department (at least one person and then one other for every 1,000 users) that is separate from the IT department and reports directly to the chief information officer.
- Spend at least 3% to 5% of the IS budget on information security.
- Train information security personnel to be aware of any employee who shows signs of being troubled or disgruntled, particularly if that employee holds an information critical position.
- Beef up security during certain events, such as mergers or downsizings, that could upset workers and

## How to protect your system if you're firing a network administrator:

- Change everyone's passwords so he/she can't use them to break into the system.
- Verify that your backup tapes are where they should be; make sure the information has been saved correctly and the tape is functioning properly.
- Do a new backup.
- Lock down every system that person had access to on the day of termination.
- Have a new network administrator ready to step into the open position immediately.
- Go up on the system and check user names and passwords, looking for anything unusual.
- Make sure every logon has a password for it.
- Lock down all the inside doors, such as the file servers, application servers and

- mail servers.
- Look for backdoors on the system, such as Back Orifice on Windows NT.
- Make sure there aren't any known vulnerabilities that haven't been patched — the administrator could have left those holes behind so he could get back in.
- Strengthen your intrusion detection system.
- Set a trip wire — software that alerts the administrator to system anomalies, such as the size of a file changing.

Continued from page 66

test folder," Olson said. "If it was May 30, 1996, and I knew it was going to trigger from the next day on, I would manually go in and move the date up."

### Criminal intent

"When Ontrack found the data string, I knew this was it," said Hoffman, who flew out to Minnesota to be at Ontrack for three days in February 1997. "I needed to know if it could have been hardware malfunction. User error. Human error ... When all of these things were disproved, we knew we had a crime here."

With the code in hand, Olson went looking through

the rest of the hard drives that Hoffman had given him to examine. And in that pile, he found those exact same six lines of code on one of Lloyd's personal hard drives that also stored his public relations photos, his checkbook software and personal letters.

"That's when I knew we had our guy," Hoffman said. "Then Grady O'Malley steps into the picture, and it was about getting the indictment."

## THE TRIAL

April 17, 2000

U.S. District Court, Newark, N.J.

O'Malley got the indictment on Jan. 28, 1998, and

after several postponements, the trial began on April 17. It lasted four weeks.

Lloyd's defense was that Omega executives were blaming him for their own failings.

"Computers crash. Networks crash. Sometimes you can't get them back up. That's what happened at Omega," argued attorney Edward Crisino of Westmont, N.J.

"These are the guys who didn't have a network administrator. These are the guys whose heads are on the chopping block," he added during his closing arguments. "It's about going to your boss and explaining why you didn't have a network adminis-

Continued on page 70

## The Tim Lloyd saga

July 31, 1996

Time bomb goes off and takes down the file server.

Aug. 6, 1996

Omega calls in Ontrack Data to take over data recovery efforts.

Aug. 7, 1996

The backup tape, which is later found in Lloyd's home, is erased.

Aug. 12, 1996

Omega calls in the U.S. Secret Service.

Aug. 21, 1996

The Secret Service executes search warrant on Lloyd's home.

Feb. 18, 1997 to Feb. 21, 1997

Ontrack discovers the time bomb code.

Jan. 28, 1998

Lloyd is indicted.

May 9, 2000

Jury delivers a guilty verdict on computer sabotage and acquits Lloyd on the theft charge.

Feb. 17, 1998

Lloyd is arraigned.

April 17, 2000

Lloyd's trial begins.

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TV/CD quality

Continued from page 68

trator. It's about explaining why you didn't have a backup protocol."

Lloyd, who did not testify in court, said during an exclusive interview with *Network World* after the trial

that he did not commit the crime.

"There's no way in the world I did this," Lloyd said. "I had complete access to the mainframe system from home. . . . If I was a vindictive person, do you think I'd go after a teeny, tiny little network?"

Lloyd even denied that he was the network administrator at Omega. "I never had an IT position anywhere," said Lloyd, who added that he's now working as a machinist at a Delaware company. "I've always been a machinist. The file server was so simplistic it

didn't need to be maintained. The most ridiculous statements made during the trial were that I was the network administrator."

O'Malley, however, pointed out that Lloyd was the one who built the network for Omega. Lloyd was in charge of doling out passwords and access rights on the server. Lloyd installed the virus software and maintained the entire LAN.

Hoffman added, "It was clear to every single person I interviewed that Tim Lloyd was in charge of and maintained the system."

And O'Malley told the jury that it could not have been anyone other than Lloyd who could have taken that file server down in such a strategic and calculated fashion.

"Was the real guy sitting next to Tim Lloyd and fiddling with the system and changing dates?" O'Malley asked the jury. "I suggest not. Who could do all this and not be questioned by the administrator? No one. It was the administrator. He was setting this up months in advance."

And what was Lloyd's motive? About a year before the crash, Lloyd had found himself losing status and clout as the company grew into a global corporation, acquiring businesses and adding plants and offices around the world. The technology star was being reduced to just another member of the team, according to witnesses for the prosecution.

Witnesses added that Lloyd's damaged ego and jealousy eventually took the form of physical intimidation of his coworkers, knowingly running faulty designs to make coworkers look bad, and bottlenecking a project because he wasn't in charge.

The prosecution contended that Lloyd was planning to leave Omega months before he was fired, that he had been going on job interviews and that he had tested the malicious code months prior to the actual crash.

"This was [Lloyd's] parting shot to a company he was leaving, a going-away gift. . . . And it was almost a perfect crime," O'Malley said. "There are two flaws here. One was the Secret Service's investigation and search of his house. The other was that someone would untangle the web of his scheme that he thought had been purged from the file server."

The jury convicted Lloyd on the computer sabotage charge after three days of deliberation, but it acquitted him on the second charge of interstate transportation of stolen goods.

Lloyd, who maintains his innocence and says he will appeal, is remanded to his home state of Delaware until his scheduled July 31 sentencing — four years to the day after the server crashed at Omega Engineering. □

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As PC prices drop below the \$1,000 sweet spot, most vendors are aiming their sights on the consumer market.

Some vendors, however, are looking at the corporate network to place their new "appliance" PCs. The lower cost virtually eliminates the need for expensive break/fix contracts with outsourcing vendors: If a machine breaks, just buy a new unit. As long as you properly protect your data, the machine it runs on becomes less relevant.

However, the machines come as is, meaning you would need to crack them open only if you wanted to add more hard disk space or memory. Furthermore, there is no ISA or PCI adapter card support, which could be important in some niches. A graphics shop, for example, may have a significant capital and training cost investment in video or scanning equipment that uses proprietary ISA or PCI adapters. If the adapter vendor doesn't have Universal Serial Bus (USB) support on Windows 2000, the shop is out of luck.

So before you jump at buying one of these cheap boxes, make sure you know whether to buy a PC that offers only USB support or a legacy version that supports serial and parallel port peripherals. Otherwise, you may end up using your cost savings on buying new keyboards, printers and other peripherals.

We recently tested two of the new appliance PCs aimed at the corporate user, the Compaq iPAQ and the Hewlett-Packard e-Vectra. For its range of features, easy installation and low cost, the iPAQ wins our

# Dawning of the Age of Appliances

**Compaq's iPAQ is ready to take on the enterprise network.**

BY RAM TACKETT

Blue Ribbon Award. But if you can wait, HP's e-Vectra should have the kinks worked out before year-end.

## Features

Compaq offers two versions of the iPAQ: with and without legacy ports (PS/2, 9-pin serial port and 25-pin parallel ports). Within each category, Compaq also sells different stock-keeping units based on the CPU type, hard drive size, and operating system (see graphic).

We tested the legacy-free version of the iPAQ, which ships with a USB

mouse and keyboard that can connect to one of three USB ports in the rear, or one of two USB ports on the front. The legacy iPAQ has only two USB ports in the front, but adds the PS/2, parallel and serial ports.

Which iPAQ version you choose depends on the type of equipment you'll need to connect to it. A Palm Pilot or Windows CE machine might need a serial cable to connect. Or you might have an old laser printer that lacks a direct network connection. If you have these devices, you'll need to buy the legacy version of the iPAQ or find products that have USB support.

Another option is to buy the legacy-free version and connect these legacy peripherals with devices that bridge the USB gap. We didn't test these devices for this review. For general information on USB and a list of vendors, go to [www.allusb.com](http://www.allusb.com).

The iPAQ has a multibay slot (similar to the Compaq Armada laptop line) that includes options for CD-ROM, DVD-ROM, SuperDisk 120 or an extra hard drive. Each drive is hot-swappable when running Win 2000.

The e-Vectra comes with two PS/2 connectors for keyboard and mouse, one 9-pin serial port (16550 UART), one 25-pin parallel port (ECP/EPP bidirectional Centronics supporting IEEE 1284), and two USB ports on the rear of the unit. If

you need DVD or want to add a second hard drive, forget about the e-Vectra. But it has an external USB floppy drive as an option.

For the most part, HP has taken a "locked box" approach with the e-Vectra, which prevents it from being expanded or easily opened. We understand the concept, but for a corporate network we like the idea of

**Compaq**

**iPAQ**

NetworkWorld



For its range of features, easy installation and low cost, the iPAQ wins our Blue Ribbon Award.

multibay options and accessibility to add more RAM or another hard drive.

If you're still thinking about ISA or PCI card support, stop living in the past. Your best bet is to invest in a device that supports USB.

## Performance

At start up, the iPAQ took 15 seconds from power-on until we could see the Win 2000 boot screen. The e-Vectra took eight seconds, and even this could be bypassed by pressing any key during the Power-On Self Test. In our tests, the iPAQ performed flawlessly, compared with some of the device driver and Win 2000 problems we encountered with the e-Vectra.

## Questions to ask before you buy

Requirement	Go with
Need to physically secure the unit?	e-Vectra
Need to connect to serial or parallel port devices now or in the future?	iPAQ legacy version
Need Windows NT 4.0 Workstation support?	iPAQ

We lowered the e-Vectra's performance score because of these anomalies. First, while trying to shut down, the power button became unresponsive, leaving us with one option — physically pulling the plug from the back of the unit. Win 2000 was also unresponsive at that time. Second, the unit spontaneously rebooted itself without warning multiple times.

The Windows event log reported that the computer had rebooted from a bugcheck (0x7f). Microsoft Knowledge Base articles (Q192463, Q103059, and Q137539) led us to believe that the problem was caused by one of two primary causes — either hardware or kernel stack over-

## NetResults

### iPAQ

**RATING: 8.05 COMPANY:** Compaq, (800) 652 6672, [www.compaq.ipaq](http://www.compaq.ipaq). **COST:** From \$499 to \$799 (model tested: \$799). **PROS:** Price, performance, multibay device options. **CONS:** Can't be physically secured, larger form factor.



### e-Vectra

**RATING: 6.10 COMPANY:** Hewlett Packard (800) 752 0900, [www.hp.com/desktops/epc](http://www.hp.com/desktops/epc). **COST:** From \$549 to \$999 (model tested: \$999). **PROS:** Small form factor, can be physically secured. **CONS:** Windows 2000 device bugs, fewer peripheral expansion options.

	Network features 25%	Features 20%	Performance 15%	Management and administration 15%	Ease of use 10%	Installation 10%	Cost 5%	Total score
iPAQ	7	9	8	8	8	9	8	8.05
e-Vectra	5	5	4	8	8	9	7	6.10

Individual category scores are based on a scale of 1 to 10. Percentages are the weight given each category in determining the total score.

flows. Hardware problems are usually related to CPU, RAM or bus. Faulty kernel-mode drivers almost always cause kernel stack overflows.

Third, the Windows event log repeatedly indicated that the 3Com network interface card (NIC) on the e-Vectra could not allocate resources necessary for an operation — which may have contributed to the spontaneous reboot. Technical support at HP was contacted about these problems. Their front-line support suggested the problem was due to a prototype motherboard. Even after we replaced the motherboard with a production model shipped from HP, the Windows 2000 event log continued to report errors with the network card.

#### Networking and connectivity options

The e-Vectra and the iPAQ offered 10/100M bit/sec Ethernet network interfaces. Other than the Windows event log telling us about the aforementioned NIC problem with the e-Vectra, we didn't perceive any network problems for either machine. The iPAQ uses an Intel Pro NIC, while the e-Vectra uses a 3Com Fast Etherlink NIC.

Because the e-Vectra and the iPAQ use integrated parts for networking, there is no upgrade path available. For example, if you're looking to bring Gigabit Ethernet to the desktop, don't look at the e-Vectra or the iPAQ. But when was the last time you switched network speeds?

The bigger issue is if the NIC fails on these units. Because the networking is integrated and not upgradable, you would need to replace the entire unit. But given break/fix contract costs, in the long run it's still cheaper to replace the unit than to have a technical support person come in, especially for larger organizations.

If you need network connectivity beyond Ethernet, get an external USB device. For example, Compaq and HP offer a 56K bit/sec external USB modem as an option.

If you plan to go the legacy-free

route, pick a Windows operating system that will support your peripherals. During our tests, we found that several of the newest USB devices did not yet have support for Win 2000. Support for HP-UX and Linux is even less likely, as neither Compaq nor HP have stated they will support Linux on these machines.

cally a programmable physical key) must be used to open the case. The standard physical key, which ships with the e-Vectra, won't work after the programming tool has reset the locks.

The iPAQ has a galvanized steel lock on a six-foot cable available as an option to secure the unit.

for Desktops, while the iPAQ uses Compaq's Intelligent Manageability agents. Of the two, only the iPAQ came with a software migration utility, PC Transplant, which helps migrate from any other Compaq PC to the iPAQ. Migration from one iPAQ to another is also supported by this PC Transplant software. For non-

#### Specifications of the machines

Category	iPAQ legacy	iPAQ legacy-free	e-Vectra
Number of versions	6	2	4
Processor	Ranges from 500-MHz Celeron to 500-MHz Pentium III	500-MHz Celeron or 500-MHz Pentium III	Ranges from 500-MHz Celeron to 667-MHz Pentium III
RAM	128M-byte synchronous dynamic RAM	64M-byte synchronous dynamic RAM (Celeron); 128M-byte synchronous dynamic RAM (PIII)	54-, 128- or 256M-byte synchronous dynamic RAM
Hard disk	Ranges from 4.3G bytes to 8.4G bytes	4.3G-byte (Celeron) or 8.4G-byte (PIII)	8.4G-bytes on all models
System bus	66 MHz (Celeron models), 100 MHz (PIII models)	66 MHz (Celeron models), 100MHz (PIII models)	66 MHz (Celeron models), 100MHz and 166MHz (PIII models)
Cache	128K-byte L2 (Celeron), 256K-byte L2 (PIII)	128K-byte L2 (Celeron), 256K-byte L2 (PIII)	128K-byte L2 (Celeron), 256K-byte L2 (PIII)
Operating system	Ranges from Windows 9X, Windows NT 4.0 and Windows 2000	Windows 2000	Windows 98 or 2000

#### Management and administration

If you're concerned with the theft of computer equipment, the e-Vectra offers superior ways to physically secure the unit, including the Master Pass Key System, which lets you open more than one HP PC with a universal pass key, a port control system, and a Kensington key lock.

The Master Pass keylock physically locks the external peripheral ports (serial/parallel) and the hard drive. The port control system gives administrators the ability to physically lock out (or lock down) external peripheral port devices. With the optional cable, you can use the Kensington key lock to bolt the unit to a solid object, such as a desk. HP offers a programming tool that can key the master locks to be unique for an organization. See [www.support.vectra.hp.com/vectra/support/level4/561vmb148en.pdf](http://www.support.vectra.hp.com/vectra/support/level4/561vmb148en.pdf). If the programming tool is used, a Pass Key (bas-

Although the multibay and SDRAM areas cannot be physically secured on the iPAQ, the Compaq Insight Management software agent detected that we removed the hood where the hard drive and memory are located.

Swapping out the hard drive on



**HP's e-Vectra is good if you're tight on space, as it can be positioned on its side.**

the iPAQ and the e-Vectra was a piece of cake. Both offer side panels for easy access to the hard drive. On the e-Vectra, you can lock down the hard drive with a physical key. Locking down the hard drive on the iPAQ isn't possible.

Upgrading memory was more difficult. The e-Vectra doesn't offer any easy way to upgrade this memory short of taking the unit apart. On the iPAQ, upgrading memory is easy through the same side panel used to upgrade the hard drive.

Both machines include software that helps network administrators manage these devices remotely. The e-Vectra comes with HP's TopTools

Compaq equipment migration, Compaq offers a 30-day trial version of Altiris Express.

#### Flexibility and ease of use

If you are tight on desk space, the e-Vectra can be positioned on its side, taking up a space that is 3.5 inches wide, 9.4 inches high and 10.7 inches deep — about the size of a large, fully loaded three-ring binder. You can also position the e-Vectra lying flat. In theory, the base should be able to support a monitor, though with the small footprint and plastic casing we would advise against placing anything heavier than a 17-inch monitor on top of it. The iPAQ should only be positioned standing up, taking up a space 6.4 inches wide, 14.6 inches high and 10.5 inches deep.

#### Installation

The iPAQ and e-Vectra came configured with Win 2000 with full driver support for true color video, sound and 10Base-T networking. Taking the units out of the box, plugging them in and getting them configured for our network took less than 10 minutes. The Microsoft Office 2000 install (which is not included with the units) took the most time — about 30 minutes per machine after installing the Office service pack.

*Tackett is president of Abacus Technologies, a network, applications-development and technology-assessment company in Houston. You can reach him at rtackett@abacustech.net*

## How We Did It

We plugged the iPAQ and the e-Vectra in to a 10Base-T LAN. Each was then added to an existing Windows NT 4.0 domain and was configured as a proxy client using the Microsoft Proxy Server 2.0 for Internet access. In addition to the iPAQ and e-Vectra, our LAN had three NT 4.0 servers, an NT 4.0 workstation and two Windows 98 Second Edition clients.

On each machine, we ran the Windows Update feature to ensure we were running the latest operating system software for Windows 2000. For office productivity software, we installed the latest release of Microsoft Office 2000 and applied the first service pack for Office. We tested as many features as possible of Win 2000 and Microsoft Office 2000, and checked for performance, networking abilities, management, ease of use, installation and cost.



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# GET WITH THE PROGRAM

**Programmable network processors could lead to smarter network devices, faster product cycles and software-based device upgrades.**

BY APRIL JACOBS

**A**new class of processor designed to make network devices smarter and faster will begin showing up in products this year.

For end users, the new generation of network processors will mean smarter switches, load balancers, bandwidth managers, cache devices and routers. Not that vendors haven't been touting smarter and better for a long time — it's just how they have been getting there and how fast that could change.

Network processors can solve some of the key problems network managers have been dealing with in recent years, such as managing WAN traffic and improving the efficiency of e-commerce sites.

Network processors can address Layer 2 through Layer 7 network protocols, and they are also much more flexible than the traditional Application Specific Integrated Circuit (ASIC)-based chips used in many network devices.

The network processor's flexibility lies in its design, which is similar to that of a Reduced Instruction Set Computing processor used in today's PCs. Because they are software-programmable, the new generation of network processors will be simpler to upgrade and easier to maneuver across product lines. New generation network processors, such as Intel's IXP-1200, can be used over and over again for devices like Web accelerators, Secure Sockets Layer offloading devices or load balancers.

Traditional ASIC-based chips take up to 18 months to develop, which means a long, slow upgrade cycle. With software-programmable chips powering their devices, vendors can cut their upgrade time in half. Because vendors will be able to develop new products without having to make a trip back to the ASIC drawing board, there will be cost savings, which presumably will be reflected in the final price tag.

Programming these new processors won't be all that tricky either, as design engineers can use tra-

ditional code, such as C++.

"For years, end users have been using ASIC-based products, and when you use those, you get a new end product about 18 months later — it's just such a long time," says Doug McEuen, an analyst with Cahner's In-Stat in Newton, Mass. "With these new chips, you will start seeing business plans with the immediate future in mind and focused on the quick turnaround."

Users could also start having more companies to choose from when buying products because vendors will essentially have off-the-shelf network-specific processors to work with. The end result could be the network equivalent of the generic "white-box" PC.

The mainstream adoption of network processors is going to change the whole value chain of

can be done through software code used by the processor.

In the ASIC environment, feature sets are hard-wired into the processor — making them a one-time use chip only, says Wade Appelman, marketing director at Sitera, a network chip maker in Longmont, Colo.

Sitera's chips are being tested by more than a dozen companies who plan to use them in network devices. Those companies include Nortel Networks and Quarry Technologies. Quarry, a start-up based in Burlington, Mass., plans to introduce an application-aware switch this month.

That switch will make it easier to enforce service-level agreements for applications. The switch will allow network managers to prioritize mission-critical applications running over the network and

## Network Processors vs. ASICs

### PROS:

- Network processors are programmable; ASICs are hard-wired for a single purpose.
- It takes 18 months to develop a new generation of ASICs; off-the-shelf network processors can cut in half the time it takes vendors to upgrade their products.
- Customers can avoid forklift network upgrades by reprogramming their existing network processor-based devices.

### CONS:

- Vendors have not yet agreed to standards for a network processor chip architecture.
- The first programmable network chips began shipping only a couple of months ago, so products won't be plentiful for a while.

the network industry by opening the door for smart start-ups and Tier 2 players to compete with the Tier 1 guys," says Sean Lavey, an analyst at IDC, a market research firm in Framingham, Mass.

Lavey says equipment vendors will have to differentiate their products based on the software that will run the network-specific engines of network processors. In the ASIC-based processor world, the chip was hard-wired for special tasks, such as the packet forwarding that standard switches do. In the future, more complex tasks, such as taking security-related functions and offloading them from heavily burdened Web servers, could be done by network devices with network processors assigned to the task. Vendors will write the code that allows the network processor to handle those specialized functions, according to Lavey.

A key benefit to software-driven processors is that end users won't have as many so-called forklift upgrades in network equipment. Switch upgrades

to make sure applications are delivered within a set amount of time.

Network chip makers including C-Port (recently purchased by Motorola), Sitera (recently acquired by Vitesse Semiconductor), New Enterprise Associates and Intel still have work to do in terms of standards. A reference platform is in the works for a standard chip architecture, but is still a few years away, according to industry observers.

That's probably because some vendors are much further along in terms of development than others. For example, Intel began shipping its network processor in volume in April, while others, like Sitera, are still sampling their wares to prospective OEMs.

But with or without an official standard, the network-processor market is destined to grow at a rapid pace over the next few years. Cahner's In-Stat expects the network-processor market to be worth \$2.9 billion in 2004, up from \$128 million in 1999. □



# Cool Tools

Quick takes on high-tech toys

Keith Shaw, Reviews Editor

## SURFING WITH A 'NET REMOTE

with browsers find it even harder.

PlanetPortal ([www.planetportal.com](http://www.planetportal.com)) hopes to change that with its WebCode technology and its Internet "remote con-

trol." Available to consumers in late September, the remote control (not yet totally remote — it's still connected to the PC via the USB port) lets users push

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buttons to locate predetermined Web sites. Still more exciting is the inclusion of PlanetPortal's "print-to-Web" technology, which prints URLs in a bar-code-type format on credit-card-sized cards. Scanning the card into the reader will bring you to that Web site. For example, a company that wants to promote its new Web site (or a special deal) could print cards and distribute them through normal venues, such as a newspaper insert or direct mailing.

PlanetPortal is also looking to make deals to put Web sites directly on the remote control (for example, push a button to go to the Weather Channel Web page).

Customers can preorder the remote by going to [www.webremotecontrol.com](http://www.webremotecontrol.com) (No price is set, but it will be around \$20). Other deals may have the device being given away as part of another product purchase or promotion.

PlanetPortal is also looking to add Web code readers to keyboards, wireless devices and PDAs.



The new version of the PlanetPortal's remote is about the size of a video game controller.

I played with an early version of the remote control, which is about the shape and size of a stenographer's notebook. The newer version has shrunk; it's now the shape and size of a video-game controller. The touchpad has buttons for shopping, news, sponsors and customizing your options. In addition, the remote has two buttons available for each card, which can take users to two locations on each site.

The device was simple to operate — push a button and you get whisked away to the Web site. My speakers literally "whooshed" after I pushed the button, a nice effect.

The customization features were outstandingly simple — push the customize button and you can quickly pick which Web site (from a predetermined list or add your own) you want assigned to that button. For example, I was able to change the "books" button from the borders.com default to amazon.com quickly. Some buttons you can't change — those are reserved for PlanetPortal sponsors/partners.

If PlanetPortal can figure out a way to get consumers, Web sites and direct marketing companies to buy into the remote control, then this is a Cool Tool worth looking at. □

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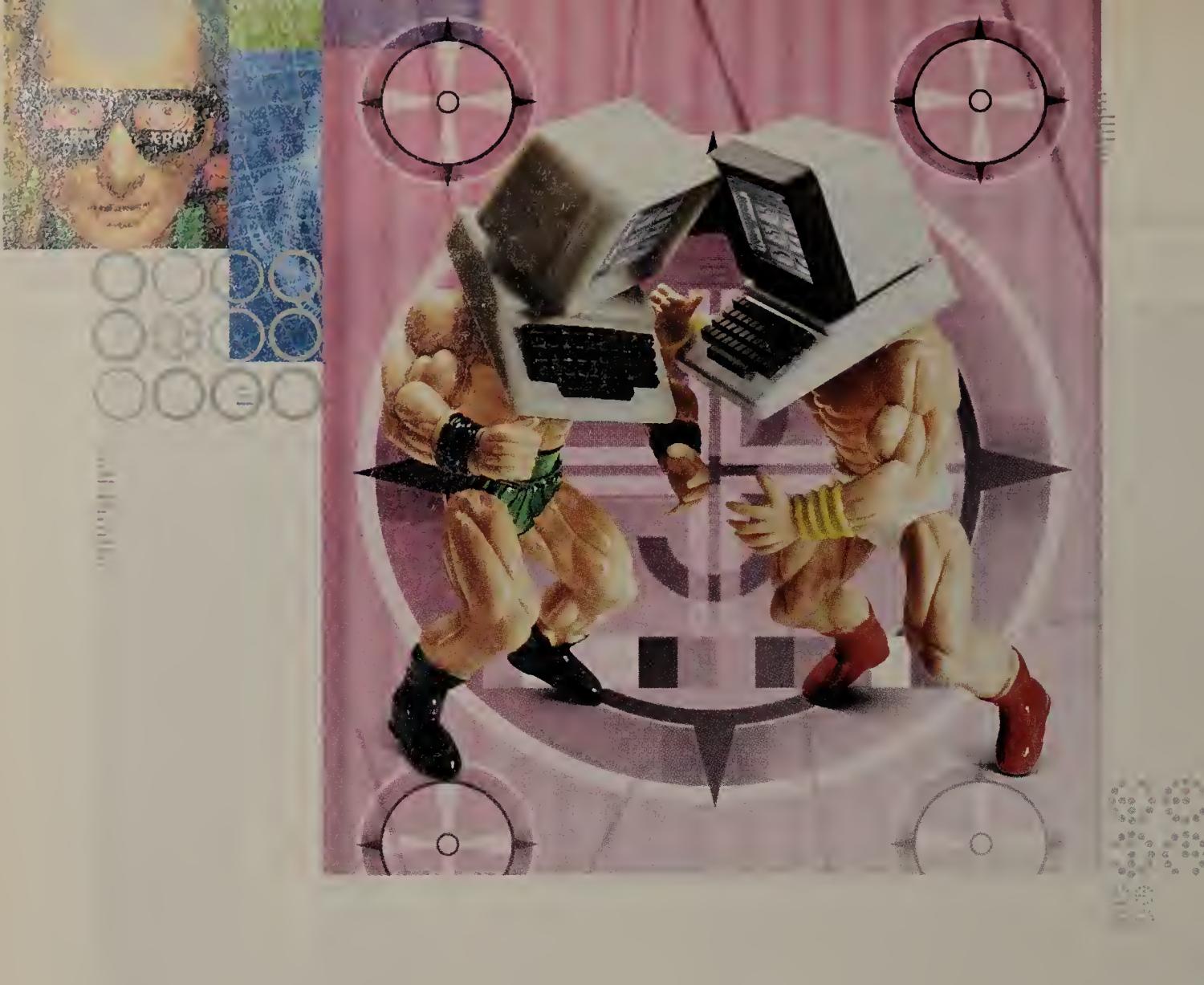


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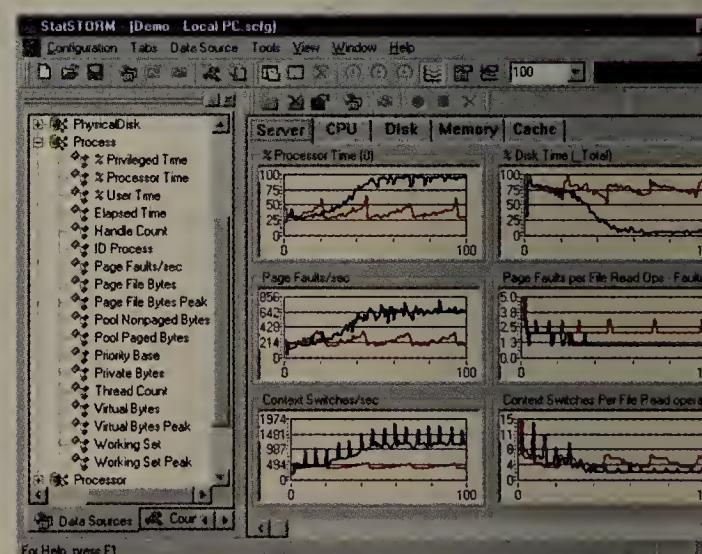
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# Management Strategies

**Career Development, Project Management, Business Justification**

# Bridging the pay gap

**Try these techniques for maintaining salary equity between loyal, long-term employees and new hires in the IT department.**

BY ALAN HOROWITZ

**T**hose who own Silicon Valley real estate and those who possess desired IT skills have more in common than just an interest in high tech — when they want to sell, they sell into a red-hot market.

The result, for employers, is a pay gap between new hires and existing staff, with newbies invariably earning more than the old guard.

That gap can create resentment, frustration and an exodus of skilled network professionals who see what the market is paying and decide it's time to move on. And when they go, the only replacements their former managers can find are people who want more money, says John Challenger, CEO of Challenger, Gray & Christmas, a Chicago outplacement firm.

Diane Tunick Morello, vice president at Gartner Group, a research firm in Stamford, Conn., says workers hired from outside a company regularly earn at least 10% to 15% more than existing workers. The more demand for a job, the higher the pay gap is likely to be.

"People willing to take up a gypsy life can run their salaries really high simply because they are in peak demand," says Tom Whitley, president of Management Recruiters of Kannapolis, in Charlotte, N.C. Those who want job security by staying with one employer are often penalized by accepting lower pay.

The result is a problem for management. David Foote, managing partner at Foote Partners, a workforce consultancy in New Canaan, Conn., comments that salaries of long-term workers are often held down because the usual cost-of-living adjustments and merit increases are far more modest than the market pay hikes fueled by supply and demand. "If the market is going nuts, you have to make adjustments," says Tami MacDuff, executive vice president and chief financial officer at Brio Technology, a software publisher in Santa Clara.

Three years ago, Gary DeWitt, director of MIS and cost accounting at Florida's Natural Growers, a citrus cooperative in Lake Wales, Fla., realized his staffers were not being paid what they were worth after he reviewed a salary survey. Along with boosting pay in the department, he cut the number of salary levels



**Gary DeWitt, director of MIS and cost accounting at Florida's Natural Growers, reviewed a salary survey and boosted the pay in his department.**

from what he describes, only half in jest, as "unlimited," to just three: entry, middle and senior. Each has a fairly broad range of job descriptions and pay.

By having fewer pay levels, he's been able to adjust workers' salaries to keep pace with the market, while not having to give them new job titles or bump them up into a higher level.

Mike Cummins, chief information officer at VHA, a hospital consortium in Dallas, created what he calls "career zones." He reduced the number of pay scales to a handful. "It allows us to consider where someone's pay should be, get rid of the inflation of titles and gives us additional flexibility," he says.

Morello advises IT executives to review several salary surveys per year and monitor the market quarterly to be sure IT salaries are competitive. MacDuff recommends using signing bonuses to attract the candidates you need without boosting their salaries way beyond what your current staff earns.

However, if there's more than a 10% gap between the new workers' salaries and the existing staff, you need to adjust the latter group's pay. "You have a flaw with your basic compensation policy. That gap will not go away. It's only going to get worse," Morello says. MacDuff says Brio had to boost existing IT salaries by as much as \$8,500 to maintain equity.

Foote recommends offering existing workers a retention bonus — a set amount of money now, plus another lump sum if they stay a year. He reasons that if you can offer sign-on bonuses to new employees, you can give retention bonuses to your existing ones.

Brio grants its employees stock options every year, not just when the worker is hired. "We call them evergreens, and they act as handcuffs to keep people on board," MacDuff says. The options take four years before they can be fully exercised.

Finally, recognize that losing a talented employee is generally much more expensive than keeping that person by boosting his salary. The cost of recruiting and training an employee can easily run into the tens of thousands of dollars. On top of that, you'll probably have to pay the new person more than the one who left.

Salaries may be a bit nutty today, but you can contain costs by planning carefully and keeping yourself in tune with the market.

*Horowitz is a freelance writer in Salt Lake City. He can be reached at alan@aborowitz.com.*

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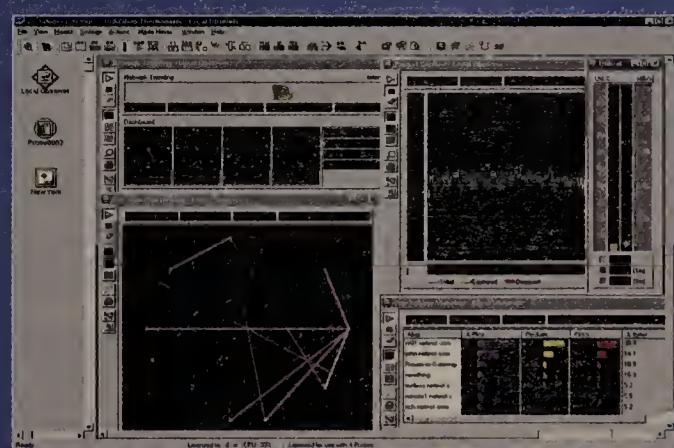
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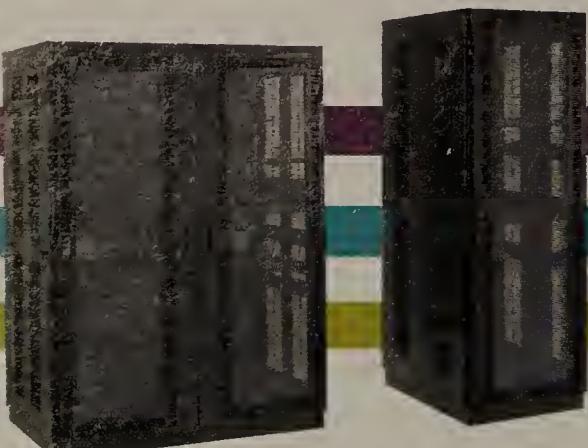
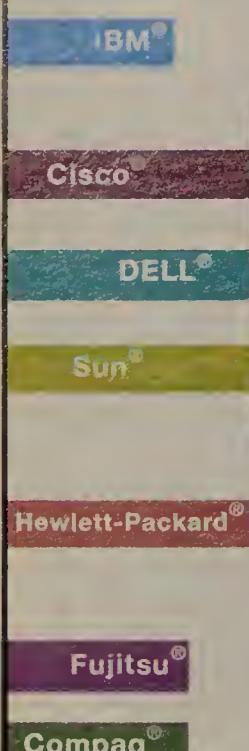


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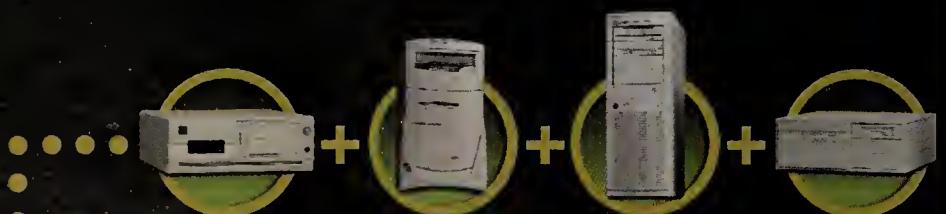
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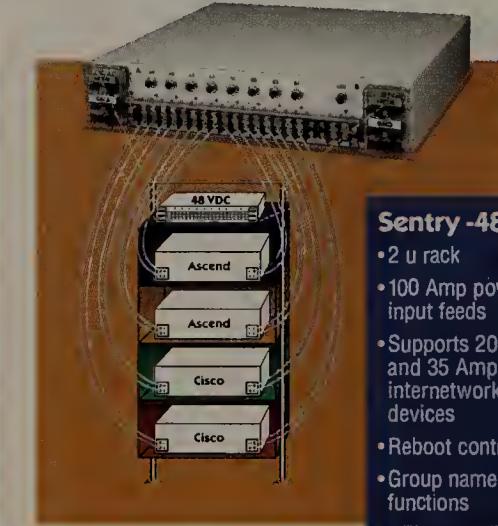


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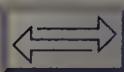
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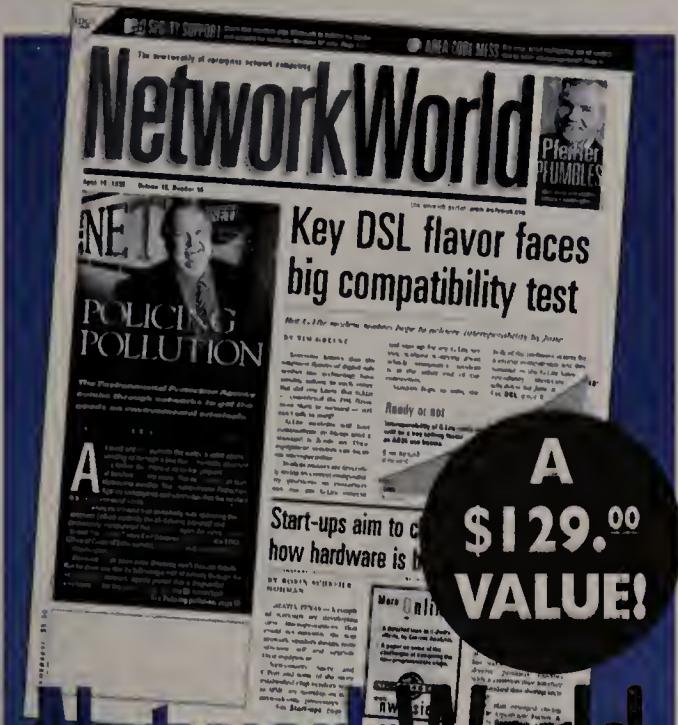
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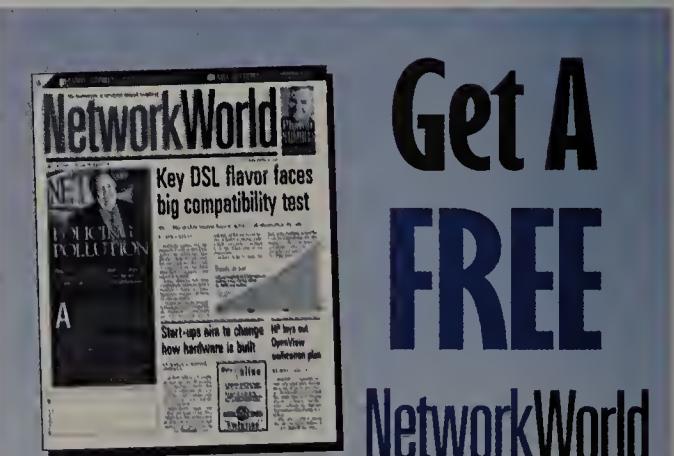


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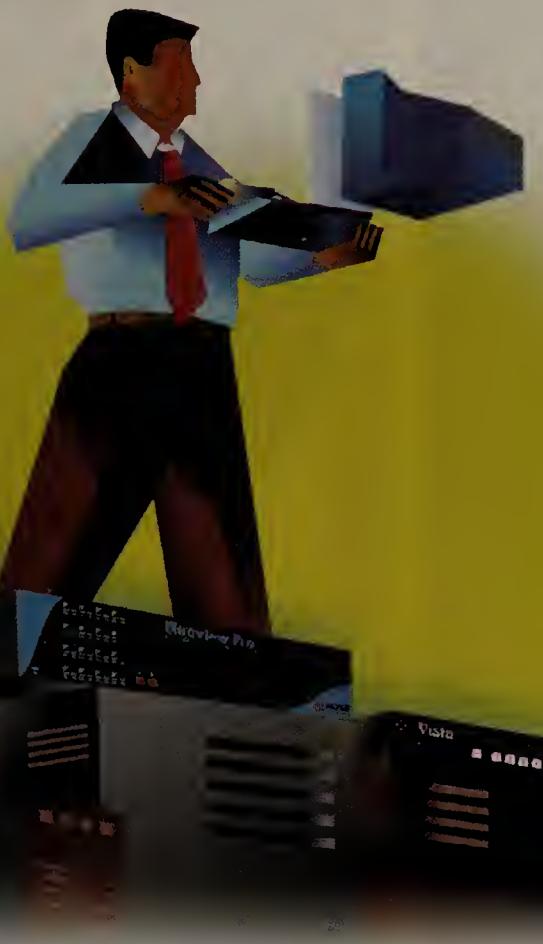
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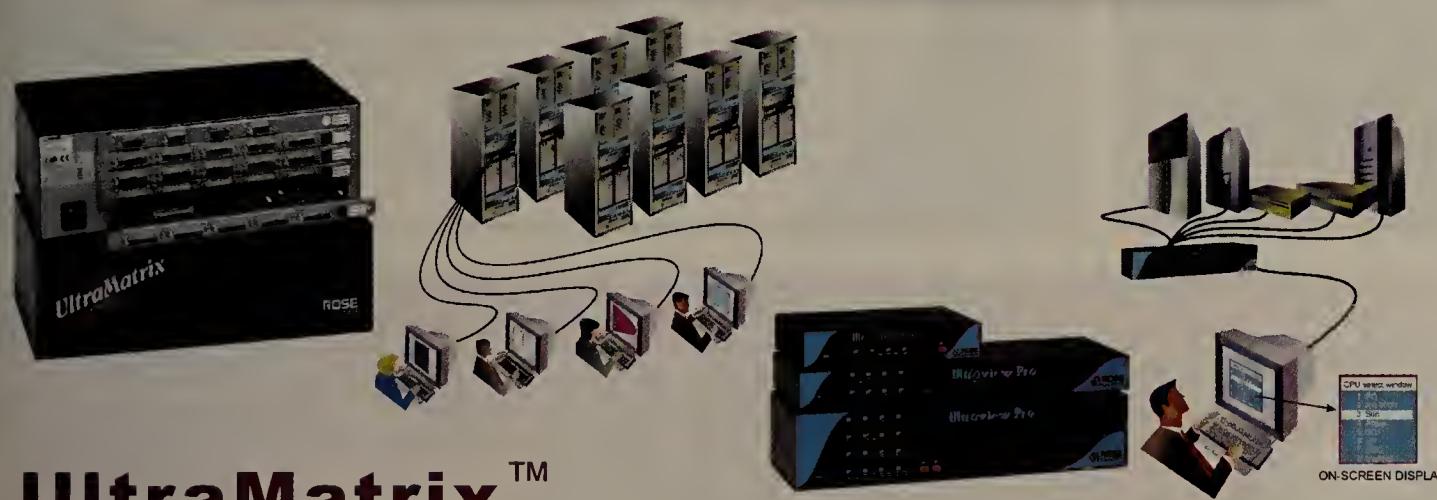
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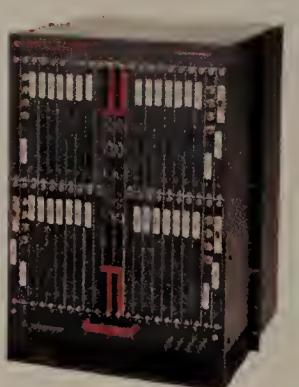
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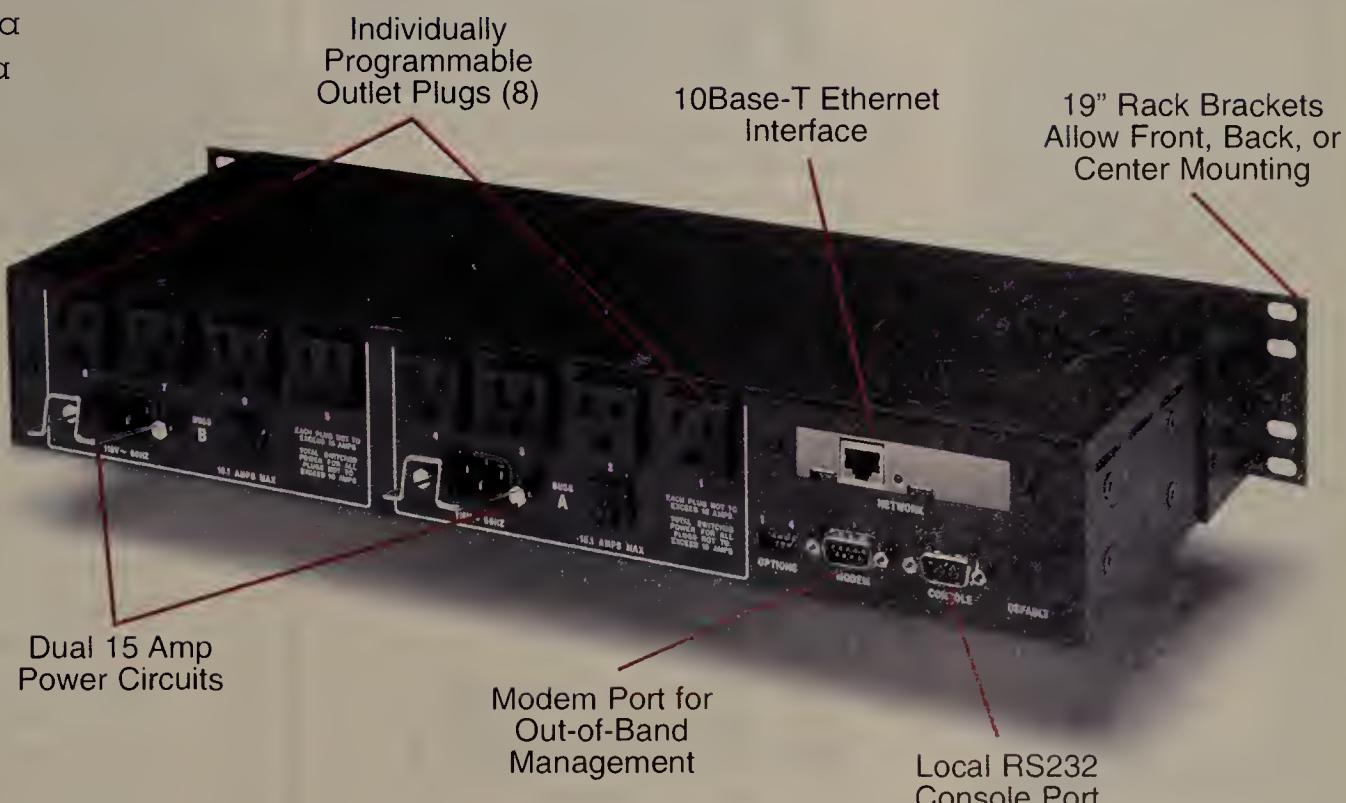


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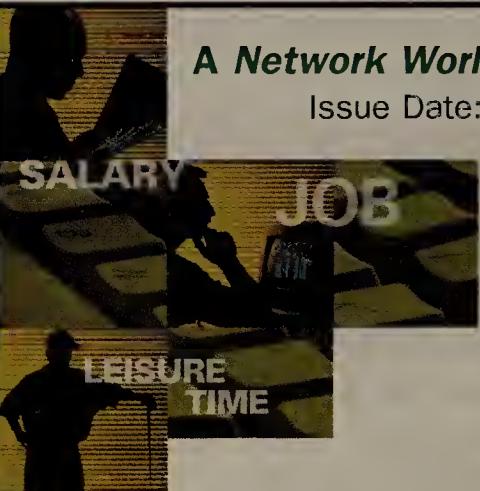
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- *Disabled, but not unable.* A look at Network IS professionals with disabilities. What challenges they face and how they have overcome them.
- *You work where?* Our annual look at the unusual places our readers do their jobs.
- *Getting your due?* In our annual salary survey, readers get an in-depth look at networking salaries and a guide for assessing how their compensation rates.
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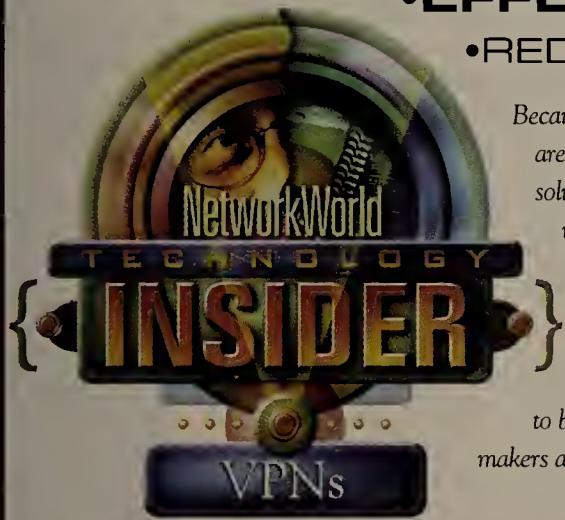
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Because VPN technology is rapidly maturing, many companies are expressing a growing interest in implementing VPN solutions as a way of improving remote access and reducing the cost of direct dial-in access. Network Leaders will depend upon NetworkWorld to guide them through the process of choosing and implementing the most effective solutions to meet their company's business needs. This must read issue is the ideal platform to bring your company's message to the strategic decision-makers and evaluators of VPN products and services.

### INSIDE THIS ISSUE

{ VPNs have become so popular that companies are now finding themselves in the position of needing multiple VPNs. There are site to site VPNs, company to company, individual to individual, customer to company, etc., each with its own special security needs. NetworkWorld senior editor Tim Greene, who has covered VPNs from the beginning, sorts it all out. }

{ Outsourcing your VPN - what types of service are available and how do they stack up against doing it yourself. }

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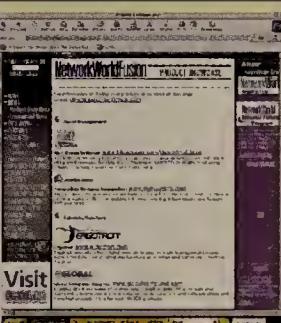
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Senior Network Analyst to maintain and manage the company's international Wide Area Network (WAN) connections in a Cisco Router environment. Monitor Internet and AS/400 (mid-range systems) network topologies. Analyze LAN/WAN connectivity using Local Area Network analyzer in eliminating bottlenecks. Evaluate products and technologies for future implementation of LAN/WAN connectivity. Implement multiple Internet and Virtual Private Networking (VPN) gateways in foreign countries. Requires Bachelor of Science Degree in Comp. Sci. or MIS and one (1) year experience in job offered or one (1) year experience in Network Administration. Candidate must also possess demonstrated expertise configuring Cisco routers for international WAN connection; and demonstrated expertise installing and maintaining Virtual Private Networking solutions. Salary \$56,160/yr; Mon-Fri, 9:00AM-5:00PM. Submit two (2) copies of resume to Case # 19992539, P. O. Box 8968, Boston, MA 02114. EOE. Applicants must be U.S. workers eligible to accept employment in the United States on a full-time basis.

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Software Engineer wanted by Telecom & Telephony Co in New York, NY. Must have Bach Degree or equiv & 3 yrs exp researching, dsgn & dvlpng comp software systems, in conjunction with h/ware product dvlpmt. Respond to: HR Dept., WorldLink, Inc, 1 Wall St Court, Fl 5, New York, NY 10005.

Systems Engineer sought by Developer of Traffic Control Systems in Tallahassee, FL. Must have BS in EE or CS or CE & 3 yrs exp dsgn & dvlpng Video Trak Windows applics using MS & Borland C++ compilers. Respond to: HR Dept., Peek Traffic Systems, Inc, 3000 Commonwealth Blvd, Tallahassee, FL 32303-3157.

Senior Analyst sought by Milford, CT. Co. involved in Men & Women's Intimate Apparel. Must have Bach in Comp Sci & 5 yrs exp dsgn logical & physical databases & coordinating d/base dvlpmt and dvlpng detailed dsgn specs based on: SAP s/ware. Respond to: HR Dept., The Warnaco Group, Inc., 470 Wheelers Farms Rd, Milford, CT 06460.

Programmer/Analyst [Ft. Lauderdale, FL; Atlanta, GA; & other US client sites]. Analyze, design, develop, implement, code, test, & support application systems. Convert data & software in accord w/user req'mnts. Environment: Unix; Unix shell scripts; DB Progress; COBOL; Windows NT; TCP/IP. Bachelor's degree in Comp. Sci or Math or Engg. + 2 yrs exp. 40 hrs/wk; 9-6; \$60K/yr. Apply in person or send 2 resumes to: North Metro, Job:# GA 6516235; 2943 N. Druid Hills Rd. Atlanta, GA 30329 or nearest Dept. of Labor Field Service Qfc.

Novell Administrator, Malden, MA: Maintain Novell and NT Servers, install and configure CISCO Routers and Lotus Notes Server. Provide technical support. Req'd. Bachelor's in Engg. or Comp Scie. or Math. 1 yr. exp. in job offered or 1 yr. exp. in computer related profession. 40 hrs/wk., 9a-6p, \$62,000/Yr. Applicants should submit two (2) copies of resume in response to: Case #20000245, P O Box 8968, Boston, MA 02114.

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Oracle DB Administrator needed to dsgn proposals & eval d/bases; dsgn logical & physical Web d/bases, & secure db architectures, install & configure Oracle RDBMS. Apply to HR, Timebridge Technologies, 700 E. Gate Dr #240, Mt. Laurel, NJ 08054.

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Systems Analyst wanted by New York Co. involved in S/ware Dvlpmt for fin'l industry. Must have BS in Comp Sci, Engg or Bus Admin & 1 yr exp dsgnng applics using Win NT, HTML, SQL & VBA. Respond to: HR Dept., Plural Inc., 115 Broadway, 14th Fl, NY, NY 10006.

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Project Manager wanted by Computer S/ware & Dvlpmt Consulting Co in Iselin, NJ. Must have Bach in Engg/Comp Sci & 4 yrs s/ware exp. Respond to: HR Dept, Indus Software Inc., 200 Middlesex Essex Turnpike, Ste 100, Iselin, NJ 08830.

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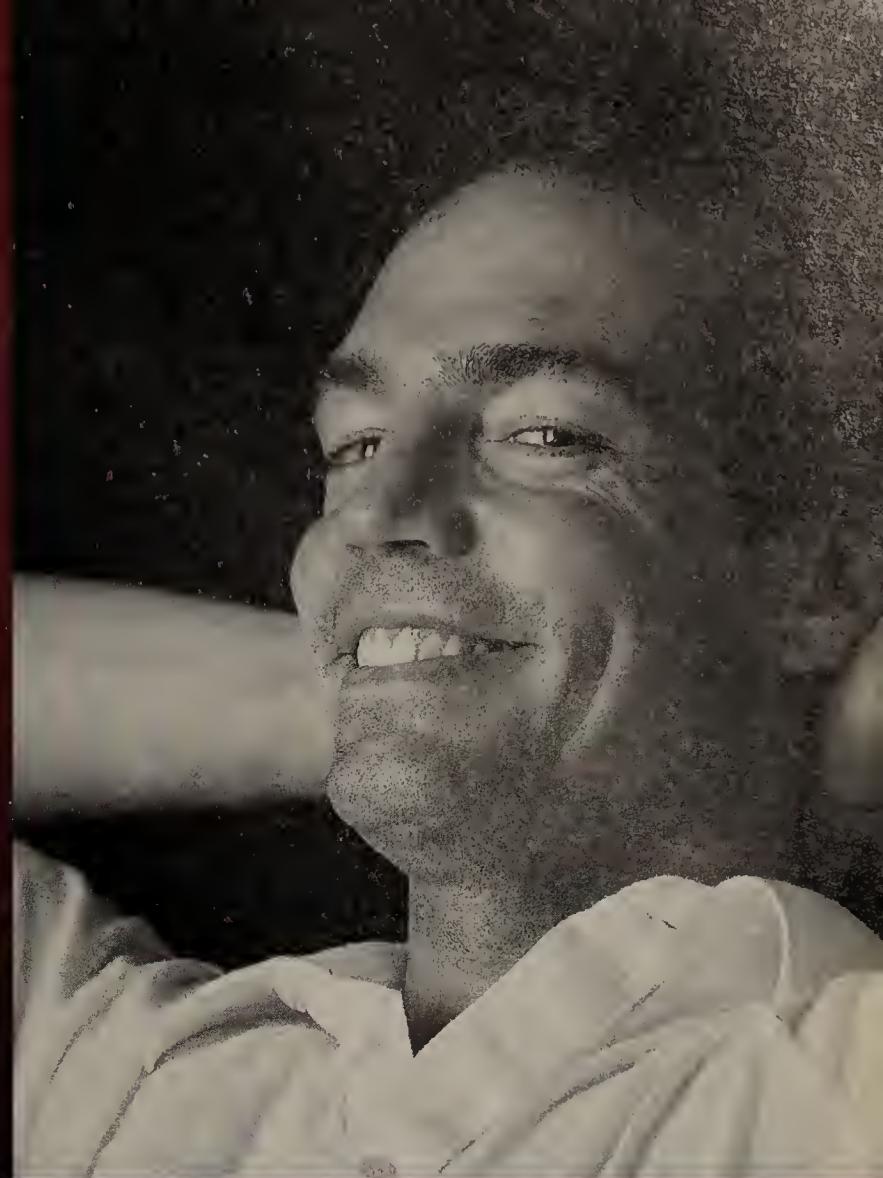
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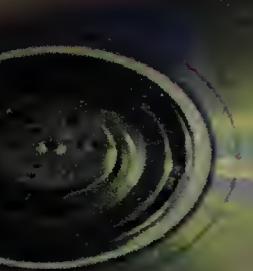
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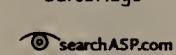
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BXXP,  
continued from page 1

directory services, who helped write several key Internet standards including Post Office Protocol 3, Simple Message Transfer Protocol and SNMP. Rose's latest creation is a general-purpose framework for creating Internet applications protocols that serve as an alternative to the aging HTTP used for Web browsing.

The leadership of the Internet Engineering Task Force (IETF) this week is expected to approve the charter of a new working group that will standardize BXXP. If the working group runs smoothly, a final specification could be ready for approval early next year.

Internet engineers say BXXP will significantly reduce the time it takes to prototype and build Internet applications protocols because it provides reusable code for basic data exchange between systems.

"When you're building a protocol, you have to decide how you're going to do error-message reporting and how you're going to handle the size of objects," says Michael Mealling, a senior research engineer with Network Solutions and an IETF participant. "BXXP solves all of that for you. Ninety percent of the [work] is done."

For corporate network managers, BXXP offers a common infrastructure for many new Internet applications that would ease staff training requirements and simplify applications support.

"BXXP is very easy to use, very easy to understand but very powerful," Mealling says. "Two completely unrelated protocols can use BXXP underneath, which saves us a lot of time."

#### Time will tell

While the BXXP technology looks promising, IETF leaders say it's too early to say how big of an impact it will have on Internet protocol development.

"It will take awhile to know if the mature technology that comes out of the working group will have a lot of support," says Scott Bradner, co-director of the IETF's transport area and a *Network World* columnist. Bradner

points out the working group will start with Rose's initial draft of BXXP but could change the protocol significantly before it becomes a proposed standard.

"[BXXP] looks like a good approach to some real needs, but it is very early in the process," Bradner says.

Standardization of BXXP would be a boon to Invisible Worlds, a start-up founded by Rose that is developing BXXP-based intranet search and data management applications for large corporations. Several Internet luminaries are affiliated with Invisible Worlds including Carl Malamud, who helped get the Securities and Exchange Commission's Electronic Data Gathering, Analysis and Retrieval database online, Internet book publisher Tim O'Reilly and UUNET founder Rick Adams.

BXXP is essentially a tool kit that developers can use to quickly create protocols for a range of applications including instant messaging, file transfer, content syndication, network management and metadata exchange. Because it uses a peer-to-peer architecture, BXXP is a good foundation for creating protocols that govern distributed file-sharing applications such as Gnutella, iMesh and Freenet.

"Implementations of protocols will be much faster and much more reliable because developers can use the basic framework in BXXP," says

#### **"Think of BXXP as HTTP on steroids. . . . BXXP won't replace HTTP for everything, but it can be used when new applications protocols are developed."**

Kris Magnusson, director of developer relations, Invisible Worlds

Marco Gazzetta, vice president of technologies at Invisible Worlds in Petaluma, Calif. "BXXP makes creating new applications cheaper in the long run."

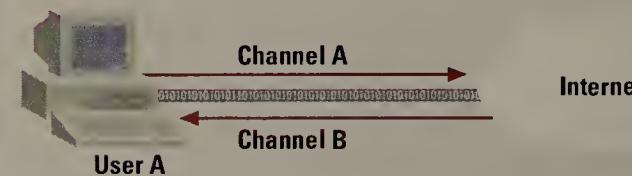
Application-specific protocols can be stacked on top of the reusable BXXP code, and developers can update the add-on protocols without changing the underlying BXXP foundation.

BXXP-enabled applications work by setting up and main-

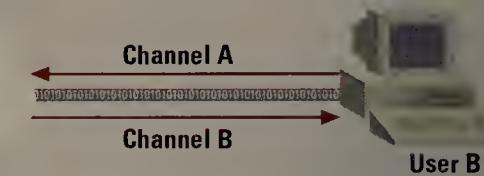
#### How Blocks Extensible Exchange Protocol (BXXP) works

BXXP is an underlying framework for developing application protocols. Here's how it works:

**1** BXXP sets up and maintains a connection over the Internet between User A and User B to carry data and information back and forth between the two parties. For example, User A might be an instant-messaging client connected through a server to another instant-messaging client known as User B.



**3** The connection can carry multiple simultaneous exchanges of data and information — called channels — between User A and User B. This would allow User A and User B to chat and transfer files at the same time using one application and one network connection.



**4** BXXP uses XML to frame the data, images and information exchanged between the two users.

taining a network connection between two users, which can alternate between functioning as clients and servers. The two users can respond to requests for data as well as push data back and forth over a network connection (see graphic).

One special feature of a BXXP connection is it can carry multiple simultaneous exchanges of data — called channels — between users. For example, users can chat and transfer files at the same time from one application that employs a network connection. BXXP uses XML to frame the information it carries, but the information can

opers have to create their own special-purpose protocols. Now they can use BXXP to speed that process.

#### Beefed-up HTTP

"Think of BXXP as HTTP on steroids," says Kris Magnusson, director of developer relations at Invisible Worlds. "People are trying to jam all kinds of things into HTTP, and it has become overextended. BXXP won't replace HTTP for everything, but it can be used when new applications protocols are developed."

Rose developed BXXP because he was creating a metadata exchange protocol and needed a baseline communications mechanism other than HTTP.

Instead of creating a metadata-specific protocol, he built BXXP as a general-purpose foundation upon which he could stack a metadata protocol he calls Blocks. Rose also developed an instant-messaging protocol based on BXXP to demonstrate its flexibility.

Invisible Worlds has four BXXP implementations in operation as part of its development of metadata products for the legal and financial services industries. "BXXP runs and is working as expected," Invisible Worlds' Gazzetta says.

Invisible Worlds first demonstrated BXXP to the IETF community in March at a session attended by more than 200 people. The next step in the standardization path is for

the BXXP working group's charter to be approved. Then the working group can hold its first meeting at the IETF's July conference in Pittsburgh.

Mealling, who attended the IETF's March session on BXXP, says "a lot of people were really, really excited about the things that [Rose] was able to get in the BXXP document and get right."

Meanwhile, Invisible Worlds next month will unveil a Web portal for BXXP developers that will provide software development kits, documentation and a database of BXXP users.

Invisible Worlds is building the BXXP portal itself but hopes to turn it over to the open source community as the protocol framework gains momentum.

Invisible Worlds also is sponsoring the development of open source code that will integrate BXXP with the Apache Web server software. A spokeswoman for Collab. Net, which is handling the development effort, says the odds are good that BXXP will be bundled in the next version of Apache, which is due out this fall.

Early next year, Invisible Worlds will launch its first commercial products based on BXXP. Invisible Worlds has 55 employees and has raised \$12 million in venture capital financing. □

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AT&T,  
continued from page 1

then AT&T will have enough time to migrate to OC-192," she says.

AT&T is trying to catch up with a national OC-192 deployment that could be complete as early as this year, according to Kathleen Earley, president of data and Internet services. In fact, Earley says such progress is a must. "With the kinds of orders that we're taking for OC-3 equivalents . . . we can't survive the year with OC-48," she says.

AT&T is reluctant to offer specifics on which cities will first be connected to AT&T's backbone via OC-192 links.

"We haven't announced our footprint entirely . . . but we have enough options on how to get this done coast to coast that it's just a matter of deploying the options," she says.

While UUNET and Cable & Wireless have said they are using Juniper Networks' M160 gigabit routers to upgrade their networks to OC-192, AT&T last week declined to share that information in a meeting with *Network World* editors. Earley says AT&T "will have terabit routers in place."

AT&T is in the process of deploying 16,500 miles of optical fiber from Lucent and Corning that can support OC-192 wavelengths over each strand of fiber, with up to 288 stands in large metropolitan areas, according to the com-

pany. This type of fiber has the capacity to support OC-768 speeds, although the electronics to support such speeds are not yet available.

Boosting bandwidth up to OC-192 is a plus for business users because high-speed services should be more readily available and operate with less congestion. However, while



AT&T's Kathleen Earley says the company may need an OC-192 backup plan in "the square states."

coast-to-coast OC-192 looks good on paper, AT&T has a difficult road ahead.

The company's first obstacle is time: The third quarter is quickly approaching, and as of now the company has in place only one short span of OC-192 that is supporting customer traffic. So either AT&T has a large portion of the networking gear in place and ready to

go, or AT&T engineers are going to be working a lot of overtime to deliver the goods this year. Moreover, Earley points out that there are parts of the U.S. — "in the square states" — where AT&T may not have pure OC-192 up and running as quickly as planned. In such cases where installation may be a problem, the company will instead overlay multiple OC-48 routers to support higher bandwidths and alternate routes for a short time, she says. This method is more costly to AT&T because more routers are needed, but customers won't notice a difference, Earley says.

The availability of high-speed bandwidth is only one piece of the puzzle for businesses looking to send sensitive applications such as financial or human resource applications over the Internet. That's why AT&T is deploying its own PKI, says Jonathan Cohen, director of advanced IP network services.

AT&T is rolling out a "commercial" PKI system that will allow the company to act as a digital certificate authority for its managed VPN customers. Cohen would not say which PKI system AT&T is deploying to support X.509 digital certificates, but did say the system will be completely managed by AT&T. Entrust and VeriSign are among the more popular PKI systems vendors.

PKI lets an ISP generate, distribute, authenticate and revoke

digital certificates, which are used to either authenticate a user or a network. Each digital certificate, which is tied to a specific user or server, for example, is assigned a key. As a user tries to access his corporate VPN the PKI system compares that user's digital certificate to the information stored on the system.

The advantage of having an ISP offer a VPN and digital certificates is that it reduces the number of vendors involved, says Mark Buchard, an analyst at Stamford, Conn., consulting firm Meta Group. Companies such as VeriSign that can act as a digital certificate authority have an edge in terms of experience, but there is nothing fundamental about PKI that would prevent AT&T from providing top-notch service, he says.

The majority of ISPs have avoided supporting PKI internally because managing such systems is complex. AT&T is believed to be one of only three ISPs supporting its own PKI, with Genuity (formerly GTE Internetworking) and smaller service provider Intelispan being the others.

AT&T will begin testing its system in July with service availability expected later this year, Cohen says.

AT&T is also testing new

access services to bundle with its INC offering. INC lets business customers send voice and data traffic over a single T-1 circuit. Today the service is limited in that smaller businesses that may not need a T-1 can't access it, and those that want more than 1.544M bit/sec can't logically bundle T-1s to get more bandwidth.

AT&T is in the beginning stages of testing DSL and NxT-1 access to its INC service, says James Daugherty, product management director for ATM and frame relay services. In order to compete with other integrated access services such as Sprint ION, AT&T has to offer more bandwidth options.

Sprint ION for small-business users offers DSL access to Sprint's backbone today. The company also offers a Sprint ION service for enterprise business users who need T-1 speeds and above. Both services allow businesses to bundle voice and data on the same line and dynamically allocate bandwidth based on usage. But Sprint ION for small business is only available in eight cities.

AT&T declined to say when DSL or NxT-1 access to INC would be available. □

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## LAWSUIT SLOWS AT&T CABLE BID

**A**T&T, Comcast and Cox Communications agreed last week not to take any action toward gaining majority control of Excite@Home, according to Cablevision Systems.

Cablevision filed a lawsuit in Delaware Chancery Court on Monday to stop AT&T and the other investors from taking control of Excite@Home. The investors will postpone any action until after Cablevision's claims are resolved at a full trial, Cablevision said in a statement.

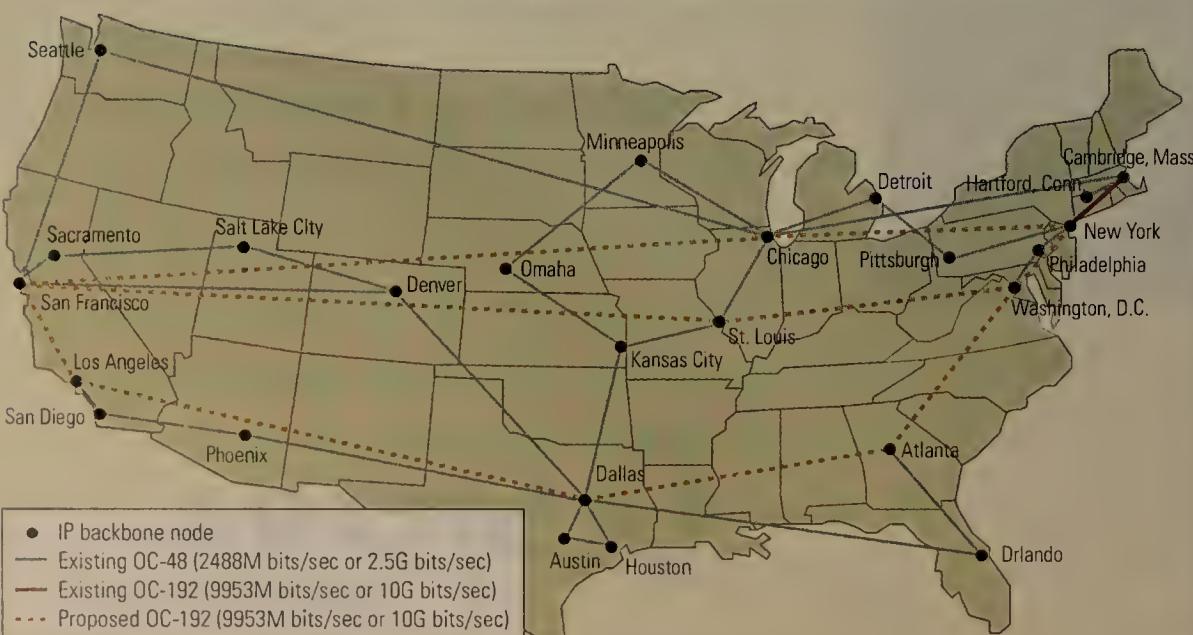
In a letter to the court, Excite@Home and the other companies named in the lawsuit also requested an expedited trial to begin Sept. 6, according to the Cablevision statement. At trial, Cablevision will seek to prohibit Excite@Home and the other defendants from completing their announced transaction.

Cablevision, which is also an investor in Excite@Home, believes the proposed transaction, which would significantly change the corporate governance of Excite@Home, would be a breach of Cablevision's stockholders' agreement with Excite@Home and the other investors, according to the Cablevision statement.

— David Legard,  
IDG News Service

### AT&T's grand network plan:

AT&T hopes to have OC-192 support throughout its Internet backbone by as soon as year-end, although executives were reluctant to commit to a specific time frame. Today AT&T only has one OC-192 segment, between Cambridge, Mass., and New York, supporting live traffic.





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# AT&T wins cable court case on a split decision

*Appeal court decision likely to extend the period of exclusive AT&T cable-modem service, but critics see hope in ruling.*

BY DAVID ROHDE

WASHINGTON, D.C. — A federal appeals court last week threw bones to both AT&T, which wants to keep its cable networks essentially closed to its own cable-modem services, and independent ISPs who want AT&T to open up its cable plant.

But on balance analysts say the complex ruling means that for the time being any residential user — or corporate network manager setting up high-speed telecommuter programs — will have to use AT&T's own cable-modem services in AT&T's extensive

cable territories.

In one key part of its ruling, the court nullified the right of local governments such as the city of Portland, Ore., to mandate open access in exchange for granting AT&T a cable franchise. That action hands the issue exclusively to the Federal Communications Commission, which has been reluctant to push the cable open-access issue.

But the court also ruled that cable-modem service is functionally a telecom offering rather than an extension of TV service. That led AT&T opponents to claim victory because

it opens a path for the FCC to decide if access to cable lines is the same as access to Bell company local loops, which are open — or are supposed to be open — to all service providers.

Still, analysts handed the overall victory to AT&T because local governments have been much more militant about open cable access than the federal government. And time is on AT&T's side to run limited cable-access trials with the ISPs it hand-selects while the FCC decides how to react to the decision.

Despite the fact that the appeals court threw the cable

ball back in the FCC's court, no significant change in the agency's current hands-off posture is considered likely until after the presidential election, which could result in a change in several of the FCC's five seats.

One more factor colors any court-decision aftermath in AT&T's favor: the changing position of AOL.

AOL originally demanded access to all AT&T's properties. But "AOL seems to have quieted its public lobbying in wake of its pending Time Warner acquisition," said analyst Jack Grubman of Salomon Smith Barney in a note to investors last week.

The current biggest single agitator for cable open access is GTE, which signaled last week it will wave the appeals court's designation of cable-modem service as a telecom

offering in the FCC's face.

"As a telecommunications service, AT&T and the cable industry are now required to open their cable modem networks to competitive ISPs on a nondiscriminatory basis," GTE associate general counsel John Raposa said after the ruling. But GTE is set to merge with Bell Atlantic, which has tended to put its lobbying emphasis elsewhere.

Following recent government approval of AT&T's purchase of MediaOne Group along with certain related divestitures, AT&T is set to serve about 30% of the nation's cable customers. It currently uses two cable-oriented ISPs

— Excite@Home for the territory it earlier acquired from the former cable giant Tele-Communications, Inc., and RoadRunner for the MediaOne territories. □

## Brainshark adds Windows Media support

BY JASON MESERVE

WALTHAM, MASS. — On-demand content provider Brainshark is looking to expand its reach by adding support for the Microsoft Windows Media format and offering a two-week free trial of the service.

The Brainshark service lets a user upload a PowerPoint presentation via the Web, then dial in with a telephone to narrate each slide. As a user narrates, the slides are shown on the user's browser. The narrator hits the pound (#) key on the phone to move to the next slide.

Once complete, the audio and slides are synchronized and stored for future on-demand viewing via RealPlayer or Microsoft Media Player. Those who want to view the presentation merely point their browser at the provided URL.

Brainshark hosts everything on its site, which is currently located at Exodus' Waltham facility. All presentations are stored in a database, which lets content be used in other slide shows, says Greg Flynn, Brainshark's vice president of business development.

Flynn says his company is not looking to compete with

the live conferencing providers such as MSHOW, Evoke and Placeware, but rather act as a complement to those kinds of services.

One Brainshark customer finds that logic compelling.

"Our customers look for

ment clients. They contract with MSHOW and other live presentation providers, but find Brainshark to be a less expensive alternative when a live presentation is not needed.

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### PROFILE: BRAINSHARK

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<b>Employees:</b>	About 30
<b>Venture backing:</b>	One Liberty Ventures, SI Ventures, Reach Internet Incubator LLP and Citizens Capital; \$4.4 million
<b>Fun fact:</b>	Founder and CEO Joseph E. Gustafson's last company, Relational Courseware, was bought by Gartner Group in 1996. After working for Gartner, Gustafson left to form Brainshark. One of his initial investors: Gartner's SI Ventures.
<b>Web:</b>	<a href="http://www.brainshark.com">www.brainshark.com</a>

more variety in the ways they can present information to a team, beyond an instructor standing in front of a class," says Nanette Wyckoff, director of e-learning products at Productivity Point in Raleigh, N.C. Productivity Point builds customer training programs for corporate and govern-

Brainshark service for \$25 per named user, per month. For those users viewing from outside the customer company, Brainshark charges the customer company between 20 cents and 80 cents per viewing, depending on volume.

Brainshark: [www.brainshark.com](http://www.brainshark.com)

**Microsoft,**  
continued from page 16

support the building of .Net applications using the Simple Object Access Protocol.

Next year, Microsoft plans to deliver the next version of Windows, called Windows .Net 1.0, which will feature a number of extensions, including transaction and queuing services. It will be followed in 2002 with another Windows .Net version that will incorporate user interface features such as handwriting and voice.

Also next year, Microsoft will deliver up to four .Net services similar to its online authentication service Passport. The services run on the Internet and can be integrated into applications to provide such things as notification services. In 2002, Microsoft will offer other building-block services, such as online storage. Also in 2002, the company will deliver Office .Net, a hosted version of Office, and Visual Studio .Net.

"This is a long-term roadmap, but there are some short-term deliverables," says Steve Ballmer, CEO of Microsoft. "This is not some-

thing that will happen in the next two days. It will take two years to develop."

### New technologies coming

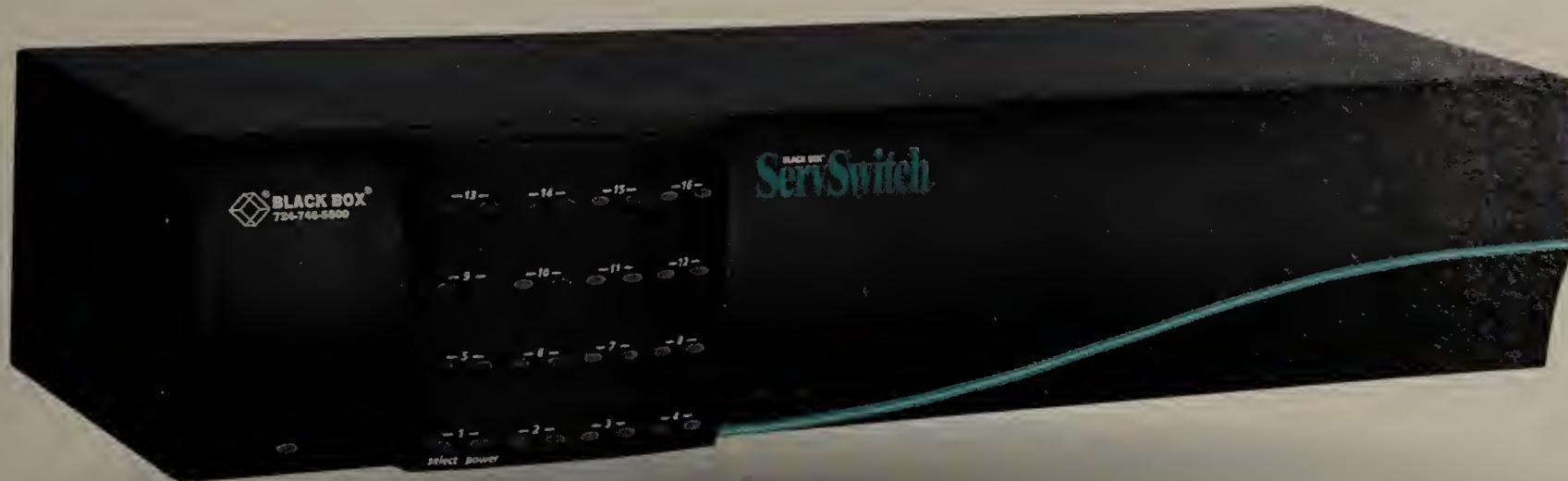
Microsoft also introduced a host of new technologies it is developing to support .Net. The Universal Canvas is a client that integrates a browser, communications features, and document authoring and annotation. Microsoft also plans to introduce an Information Agent that manages a user's identity and controls interaction among Web sites, services and the user.

Proponents of software as services hail Microsoft's support of the concept.

"It's not trivial that the largest seller of software is saying that software really is a service," says Jack Serfass, co-founder of Bowstreet Software in Portsmouth, N.H. Bowstreet develops Business Web Factory, which creates a directory of Web services that can be assembled on the fly.

"Microsoft can play a major role but I don't think one company will own the Internet platform like one owns the desktop operating system platform." □

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# Privacy spec gathers steam, sparks criticism

BY CAROLYN DUFFY MARSAN

NEW YORK — A technology that enables privacy protection on the Web gained several IT industry backers last week, with Microsoft, IBM, AT&T, Hewlett-Packard and AOL pledging their support for the emerging standard.

Even the White House jumped on the privacy bandwagon, announcing that its Web site would comply with the Platform for Privacy Preferences Project (P3P) technology being developed by the World Wide Web Consortium (W3C).

The two major holdouts on P3P appear to be Oracle and Sun, neither of which has been involved to date.

## Proponents split on P3P technology

Privacy advocates are split on the P3P technology. The Center for Democracy and Technology hailed P3P as an important first step in making

cate their privacy policies to end users and for end users to make informed choices about the personal information they reveal while surfing the Web. Under development for four years, P3P was demonstrated for the first time on Wednesday at an event held in New York.

### Microsoft endorsement

In the most significant endorsement of the day, Microsoft announced it will support P3P in the next major version of Windows, code-named Whistler, which is due out next year.

Microsoft demonstrated a P3P-compliant plug-in to the current version of its Internet Explorer browser, as well as an automated tool for Web site operators to convert their English-language privacy policies into P3P-compliant code. The Privacy Statement Generator will be available as a free download later this summer.

"Microsoft has gotten religion around security, and

Microsoft will support P3P in its server-side Web offerings, including Internet Information Server, Site Server and Commerce Server.

AOL was less forthcoming about its plans to support P3P in the Netscape browser. Tatiana Gau, AOL's integrity assurance officer, says P3P will not ship in the next version of the Netscape browser, code-named Mozilla, which is due out later this year. She declined to comment on when a P3P-compliant version of Mozilla will be available.

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IBM also announced its support of P3P but declined to say when the technology would be available in products such as WebSphere Studio for content creation and WebSphere for Web application servers. IBM demonstrated a P3P-compliant privacy policy editor that is available free on its Alphaworks Web site.

"P3P is important because it is the next phase in how we provide privacy in an open

and transparent way," says Harriet Pearson, an IBM liaison to the W3C. "Now we need to drive this [specification] out into the market."

Pearson says it will be at least six months before commercial-grade versions of IBM's server products sup-

port P3P. For example, IBM subsidiary Tivoli will ship a new privacy manager in the third quarter of this year to help Web site operators enforce their privacy policies, but the initial version will not support P3P.

## Here is where you will see P3P

### P3P will be supported in the following types of products:

#### Client:

- Web browsers
- Shopping toolbars
- Electronic wallets

#### Server:

- Web server software
- Web application development tools
- Privacy managers
- Seal programs that enforce compliance

### Detractors weigh in

P3P "is a complex and confusing protocol that will make it more difficult for Internet users to protect their privacy," the report says. "P3P also fails to address many of the privacy problems specifically associated with the Internet."

P3P is a specification that lets Web sites express their privacy policies in XML, a standardized, machine-readable format which can be downloaded automatically and read by compatible Web browsers.

An end user would configure a P3P-compliant browser to understand what personal information the user is willing to disclose to a Web site and how that information can be used. As the end user surfs the Web, the browser would automatically compare the privacy preferences to a Web site's policy and tell the user whether or not the site meets the criteria. □

**"P3P is important because it is the next phase in how we provide privacy in an open and transparent way."**

Harriet Pearson, liaison to the World Wide Web consortium, IBM

the Web more privacy conscious, while the Electronic Privacy Information Center (EPIC) and other groups assert that P3P fails to provide enough protection for consumers.

P3P provides a universal way for Web sites to communi-

we're quickly coming up to speed on the privacy side," says Greg Hampson, Microsoft's leader of P3P development.

Although he declined to specify additional P3P product plans, Hampson says it is "reasonable" to assume Mic-

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# landata.

**And I am a challenge.**

**I confound the Chairman,  
confuse the co-worker,  
and mystify all mere visitors  
to the digital domain.**

**But some know  
that with this science  
comes this security  
for Chairman and co-worker alike:  
I put their progress first.**

***Does anybody put me first?***

We're investing 6 billion dollars in the most far-reaching deployment of broadband out there. We're one of the largest network integrators, and a provider of advanced, global eCommerce solutions. We're SBC. The combined strengths of Ameritech, Pacific Bell, Southwestern Bell, Nevada Bell, SNET and now Sterling Commerce.



## The privacy 'duck and cover' drill

In Thursday, June 22, my friend Mr. Monologue ([www.MrMonologue.com](http://www.MrMonologue.com)) noted that George W. Bush is promoting a \$400 million plan to prod schools into using the Internet as a learning tool, not a substitute for real education. Mr. Monologue suggests that Bush might have said: "Beware something that is well-connected and appears to have all the answers, but is really an empty ... hey wait — nevermind."

Here's an interesting question: What appears to have all the answers but really has none? Answer: the Los Alamos weapons lab.

The recent case of the vanishing hard drives at Los Alamos is a clear indication that some government departments are less than competent in managing their

affairs when it comes to what many of us would think of as basic IT concerns.

In a senate hearing last week, Energy Secretary Bill Richardson said "the working theory" (translation: we have half a clue) is that the two drives, which contain information on how to dismantle an array of nuclear

devices, disappeared around the "end of March of this year."

I must be under some kind of illusion here. I would have thought that hard disk drives containing the secrets of global annihilation would have been under a rather more impressive security system than being stuck in a suitcase in a vault, where it appears, anybody with more clearance than Bob, the guy who makes coffee, could get access.

But the one thing that I can't find out (and if you know otherwise, please tell me) is whether the disk contents are encrypted. If the disks are encrypted using, say, Triple Data Encryption Standard, then the risk would have been minimal unless the guy who got his hands on them happened to have a roomful of supercomputers and a spare few thousand years.

If, on the other hand, the disks aren't encrypted and the physical

access to the vault where they were kept was as easy as pulling into In 'n Out Burger, then heads, including Richardson's, should roll.

But over and above the terrible implications of this particular three-ring circus ("Ali, we have struck, how they say, pay dust! Now we can fry Salman Rushdie's infidel butt ... so what if we take out most of Southern England and ourselves with it! Our families will be rich! Ah-ha-ha-ha!") is the issue of how the government thinks of the security of the state and the individual. Or rather, doesn't think.

Regarding the latter, it has become a routine in financial transactions to ask for your social security number. Even the government admits that your social security number was never meant for this kind of role. But do they try to protect your private data? Ha! There's a thousand ways you can be pinpointed and identified in which the government will help.

The fact is, folks, the government's idea of data security, whether it is your social security number or a couple of hard disk drives containing the blueprints for Armageddon, leaves — shall we say — a lot to be desired.

What I worry about is how far our privacy and security will be exposed before the government feels compelled to take action. And even if this "action" is carried out next year or next quarter or even next month, will it be enough?

I contend that the cat is out of the bag, the chicken has flown the coop, and the horse has bolted. It's too late! It doesn't matter what you do about your privacy and what we do about national security. It won't make a difference.

On the personal level, unless what you do to avoid being visible is dramatic, in-depth and obsessively maintained, you are there to be counted, analyzed, tracked, exposed, classified and monitored.

Beware something that is well-connected, whether it is George Dubya Bush or the government in general. Those connections spell the end of your privacy and security. Assuming that we aren't all fried by a nuclear blast first.

*Anxiety attacks to nwcolumn@gibbs.com.*



**Mark Peters and his two co-founders** of **Flutter.com** were carrying a can't-miss business concept when they left **Bain & Co.** in San Francisco to launch their start-up last year.

So what possessed this trio to set up shop outside **London** instead of inside **Silicon Valley**? The answer is this country's hypocritical, nonsensical — one might even say schizophrenic — laws governing gambling.

You see, **Flutter.com** — a clearinghouse for folks who want to bet with each other on just about anything — would be *illegal* here, despite the fact you can't toss a pair of dice these days without hitting a government-sanctioned lottery outlet, Keno parlor or casino.

"There's a much different betting culture in England," Peters says. Translation: The Brits are willing to admit what priggish Americans won't — that the instinct to wager can no more be bottled up by man's law than can the appetite for alcohol.

Here's how **Flutter.com** works: The site lets participants post their own wagers and odds, as well as accept the wagers and odds presented by others. **Flutter.com** acts as "a trusted stakeholder in the arrangement," Peters says, in that it holds the money (\$150 max per bet) and settles all accounts once an outcome has been decided.

And here's the beauty of the business model, which is backed by **\$35 million in venture capital**: The street-corner bookie typically charges a 10% fee — known as vigorish — which means that a gambler must actually risk \$110 to win \$100. **Flutter.com** takes only 2.5% off the top on its site and also manages to sidestep England's 6.75% betting tax. (I guess the British pols also pander to the dot-coms.)

In the long term, you can bet that all attempts to stop Internet gambling will prove futile.

In the short term, it's a shame we're driving smart entrepreneurs overseas.

**Fair or unfair, Texans are supposed** to have egos the size of, well, Texas. However, that stereotype apparently does not apply universally within the state's burgeoning high-tech community. Witness this comment heard by my Austin-based colleague Deni Connor at a gathering of start-up CEOs last week.

"We have what we call the 1:8:20 rule here in awarding funding," said **Rob Adams**, founder and managing director of venture capital firm **AV Labs**. "If one person in Austin has the idea, eight people on the East Coast will have the same idea and at least 20 on the West Coast will."

He's right. But who do you believe might be more put off by his bluntness? The entrepreneurs in Austin? Or those on the East Coast?

**Columnists revel in the art** of the rhetorical haymaker, even when they are the target. Here's "The Father of the Internet" (Vint Cerf) in a dust-jacket blurb about "The Inventor of Ethernet" (Bob Metcalfe) on the occasion of the latter's new book, a compilation of Metcalfe's *InfoWorld* opinion columns:

"So what to make of this ranting gasbag named Metcalfe? ... You may not like the way he phrases it, but he's actually got some very important things to say, and he isn't afraid to say them."

Published by our corporate cousins at **IDG Books**, Mr. Gasbag's "Internet Collapses and Other *InfoWorld* Punditry" is the type of book every columnist longs to produce because you get paid a second time for work that wasn't digging ditches the first time around.

You can tell the good compilations from the riffraff by riffling to any random column. My finger landed on page 280, where Metcalfe had this to say about Linux:

"Why do I think Linux won't kill Windows? Two reasons. The Open Source Movement's ideology is utopian balderdash. And Linux is 30-year-old technology."

Now that's a haymaker.

*McNamara will never get his own "best-of" book if you don't help, so send tips and gossip to buzz@nw.com.*



PAUL  
MCNAMARA



MARK  
GIBBS

HERE  
HACKER,  
HACKER,  
HACKER.



Network ICE, the company that brought you BlackICE™, continues to pioneer enterprise-wide protection from hackers and malicious employees throughout today's borderless corporate network. Whether your notebooks, desktops and servers are remote, inside the firewall, or residing on a partner's extranet, Network ICE protects every system, everywhere, from a single manager.

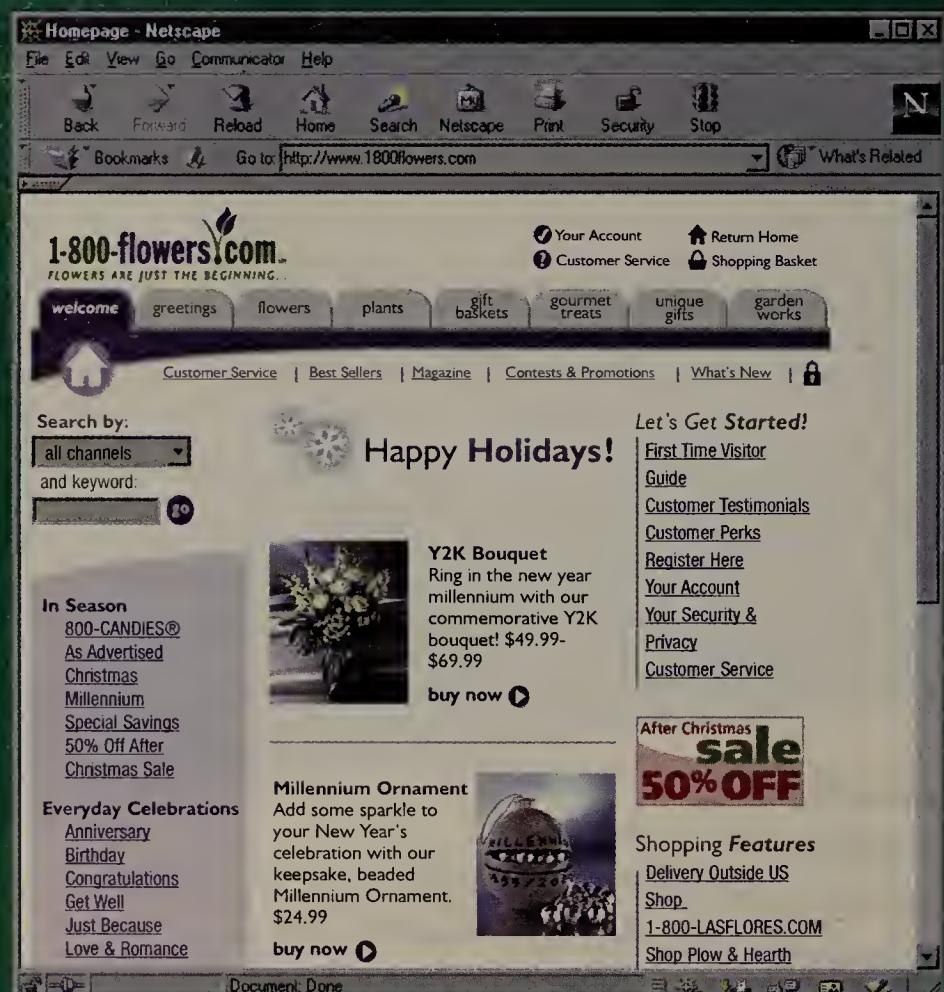
Using revolutionary anti-hacker technology, Network ICE products act like an Internet bodyguard; inspecting every packet, blocking those that are hostile, allowing harmless data to pass, yet always ready to step in and intercept an attack. Even from someone you trust. Network ICE products complement existing firewalls and VPNs. Visit [www.networkice.com](http://www.networkice.com) to learn more about our enterprise solutions, and how to stop hackers cold...

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Stop Hackers Cold

# Unicenter Helps 1-800-FLOWERS.COM Blossom.



1-800-FLOWERS.COM is one of the world's leading and fastest growing online retailers. With a complex network of thousands of florists worldwide offering over 7,500 products — reliability, speed, and efficiency are crucial.

Unicenter TNG® monitors and manages 1-800-FLOWERS.COM's worldwide infrastructure and support systems, enabling them to fulfill online orders with subsecond response times to over eight million customers.

To help ensure the reliability of 1-800-FLOWERS.COM, Unicenter TNG proactively detects and corrects problems before they impact performance. From the front-end website to the underlying network infrastructure, Unicenter TNG provides the most complete, end-to-end eBusiness management solution available.



Join 1-800-FLOWERS.COM, and wake up and smell the roses. It's time to reap the rewards of eBusiness with Unicenter TNG. **For more information, visit us at [internetsolutions.ca.com](http://internetsolutions.ca.com).**

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